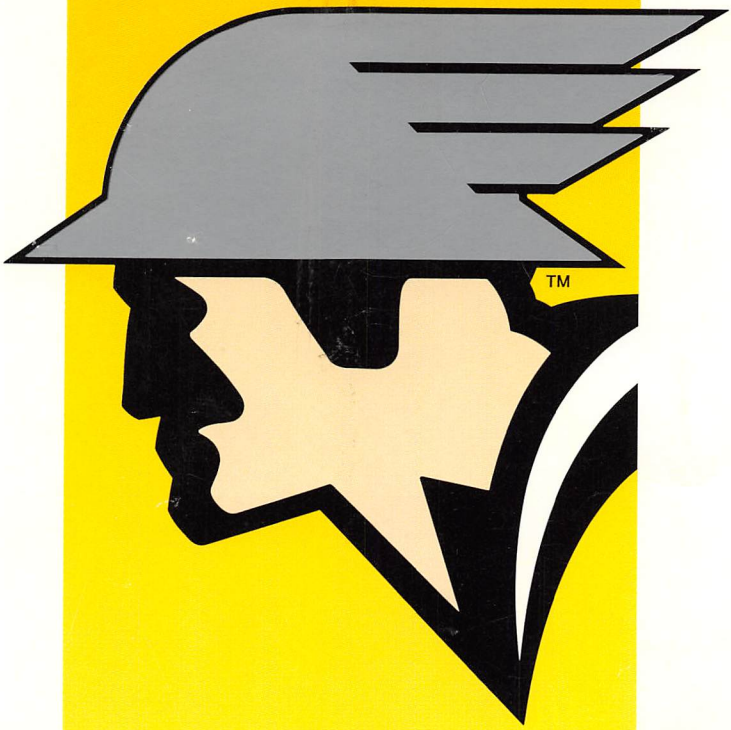
PC-KWIK®



MICROSOFT WINDOWS
Version 3.0 Compatible Product

POWER PAK

VERSION 2

THE PREMIER UTILITY PACKAGE FOR TOTAL SYSTEM SPEED-UP

IBM DOS VERSION

Includes both 5¼" and 3½" diskettes

MULTISOFT

PC MAGAZINE EDITORS' CHOICE February 14, 1989 Super PC-Kwik Version 2.00

PC WORLD BEST BUY

awarded to Super PC-Kwik

Software Digest Rated #1 (Vol. 6, No. 10)

PC MAGAZINE "BEST OF 1988"

awarded to Super PC-Kwik

For Technical Support

Call 800-888-5945 or 503-644-5644

FAX 503-646-8267

(Please include return FAX #)

CompuServe: GO PCVENA, select section 14, or email 76004,151.

PC-KWIK
POWER PAK
Version 2

from MULTISOFT

Multisoft Corporation
15100 SW Koll Parkway
Beaverton, OR 97006
503-644-5644

Program and Manual
Copyright 1988-1991 Multisoft Corporation

All Rights Reserved

Document 5105

PC-Kwik is a registered trademark of Multisoft Corporation
ReView and ReDOS are trademarks of Multisoft Corporation

IF YOU ARE IN A HURRY

If you are in a hurry and are familiar with IBM PCs (and your computer in particular) follow the steps below. Otherwise, refer to Section 2 for more detailed information on installing PC-Kwik Power Pak for the first time. If you are upgrading from an earlier version of Power Pak, see the addendum for existing users elsewhere in this package.

1. Use the Power Pak installation utility to set up the Power Pak files on your boot disk. To do this, place the Power Pak diskette in drive A or B. If you are using drive A, type:

   ```
   A:
   INSTALL
   ```

   Warning: Do not run more than one disk caching program on your system at one time. If you have other disk cache programs running, unload or remove them before you try Power Pak.

   Note: If you are installing Power Pak on a laptop computer with a monochrome display, use the /BW parameter when you type the INSTALL command.

2. The INSTALL utility displays information and asks you to choose from several installation options. Use the arrow keys to move the highlight from one choice to another and press <Enter> to make your choice.

   Note: If your printer is not attached to LPT1 see Section 7 for more information on using the PC-Kwik Print Spooler.

3. To start and stop the Power Pak programs from the DOS prompt, use the POWERON and POWEROFF batch files.

4. To see Power Pak in action, type DIR several times from a large directory, use a word processor to move the cursor around in a file, and pop up the print spooler window while printing a file by pressing the <Alt><Shift><PrintScrn> hot key. You'll see faster screen displays, faster key response, and an easy way to control printing.

These instructions are very brief. Each Power Pak program contains a wealth of features and capabilities, which are explained in much more detail in this manual. Refer to Section 2 for detailed installation and loading instructions. Sections 3 through 7 give you background about each program and information on selecting the basic options and parameters. The Appendices cover more advanced and detailed topics.

TABLE OF CONTENTS

IF YOU ARE IN A HURRY iii

Section 1 INTRODUCTION AND OVERVIEW 1
- What's in Power Pak? 1
- Memory Sharing and Lending 3
  - Using Expanded and Extended Memory 4
  - Saving Conventional Memory 5
- Manual Organization 6
  - For More Information 7
  - Terminology 7
  - Conventions in This Manual 8
- Getting Help 9

Section 2 INSTALLING POWER PAK 11
- Installing the Software on Your Disk 11
  - The TESTEMM Program 13
- Trying the Power Pak Programs 15
  - Trying the Disk Cache 16
  - Trying the Keyboard Accelerator 17
  - Trying the Screen Accelerator 17
  - Trying the Print Spooler 19
  - Trying the RAM Disk 20
  - Trying PCKMAP 20
- Command Line Conventions 21
- Loading the Power Pak Programs 22

Section 3 SUPER PC-KWIK DISK ACCELERATOR 25
- Introduction 25
  - What is a Disk Cache? 25
  - Alternatives to Caching: Buffering and RAM Disks 26
  - Disk Cache Theory 27
  - Disk Caching and Applications 28
  - Disk Cache Size 28
  - Disk Cache and Processor Speed 29
  - Beyond a Standard Disk Cache 29

Sharing and Lending Memory 30
Using the Disk Accelerator 32
Loading From an Alternate Drive 33
Memory Use 33
Subset Files 36
Measurements 37
Windows Measurement Display 38
Cache Hit Indicator 39
Displaying Parameters 39
The Help Screen 40
Unloading 40
Parameter Options 41
When You Load Super PC-Kwik 41
Examples 45
While Super PC-Kwik is Running 46
Examples 48
For More Information 48

Section 4 PC-KWIK RAM DISK 49
Introduction 49
How RAM Disks Work 49
A RAM Disk vs. a Cache 50
Features 51
Automatic Memory Location 51
Dynamic Memory Usage 51
Using the RAM Disk 52
Setting Up 52
Setting Up Two RAM Disks 53
Signing On 53
How to Use the RAM Disk 54
Example 55
Impact of the RAM Disk Size on the PC-Kwik Spooler 56
Unloading the RAM Disk 56
Parameter Options 57
Examples 57
Common Questions 58

Section 5 PC-KWIK KEYBOARD ACCELERATOR 59
Introduction 59
Features 60
Key Repeat Speed 60
Key Repeat Acceleration 60
Horizontal vs. Vertical Speed 60
Eliminates Character Run-on 61
Fast Response on Selective Keys 61
The ReDOS Command Editor 61
Saves Conventional Memory 62
Using the Keyboard Accelerator 63
Adjusting the Keyboard Speed 63
Modifying the Default Speed Settings 64
Spreadsheet Mode 65
Disabling the Keyboard Accelerator 65
Disabling the Hot-Key Commands 66
Disabling the Audio 66
The Help Screens 66
Unloading 67
Using the ReDOS Command Editor 67
ReDOS Functions 69
Parameter Options 75
While Loading the Keyboard Accelerator 76
While Loading or Running ReDOS 78
While Running the Keyboard Accelerator 81

Section 6 PC-KWIK SCREEN ACCELERATOR 83
Introduction 83
The Effects of Screen Acceleration 83
How Fast? 84
Features 84
Screen Blanking 84
ReView Scroll Back 84
Saves Conventional Memory 85
Using the Screen Accelerator 85
Screen Blanking 86
Modes of Operation 88
Controlling Screen Speed 89
The Help Screen 90

Using ReView 90
Starting ReView 91
Moving Up and Down 91
Changing the Size of the ReView Buffer 92
Quitting ReView 92
Disabling ReView 92
Parameter Options 92
When Loading 92
While Running 94

Section 7 PC-KWIK PRINT SPOOLER 97
Introduction 97
Print Spoolers 97
Features 98
Flexible Memory Requirements 98
Saves Conventional Memory 98
DOS Commands and Hot-Keys 99
The Pop-up Display 100
Automatic Data Compression 100
Using the Spooler 101
Determining the Printer Type 102
Displaying Spooler Parameters 104
Displaying Spooler Measurements 105
Print Control from a Batch File 105
Unloading the Spooler 105
The Help Screen 106
Getting the Spooler's Attention 107
The Spooler Pop-Up Display 108
Description 108
Selecting the Menu Options 109
Exiting from the Pop-up Menu 109
The Pop-up Display Colors 110
Graphics Video Modes and the Pop-up Display 110
Parameters 110
When Loading 111
While Running 112
Examples 114
For More Information 114
Common Questions 114

Appendix A ADVANCED USE OF SUPER PC-KWIK 119
Advanced Parameters 119
Examples 129
Suggested Cache Sizes 129
Using the Least Amount of Conventional Memory 130
DOS BUFFERS Command 131
Loading and Unloading Using Batch Files 132
Changing Diskettes 132
Changing Diskettes in High-Capacity Drives 133
Advanced vs. Generic Support for Super PC-Kwik 134
The PowerWrite Option in Advanced Support 136
Common Problems 138
If a Hard Disk is Not Cached 138
INTERNAL STACK FAILURE Error 139
Swap Programs 140
Invalid Boot Sector Errors 140

Appendix B ADVANCED USE OF THE KEYBOARD ACCELERATOR 143
Introduction 143
Advanced Parameters 143
While Loading the Keyboard Accelerator 143
While Loading or Running ReDOS 144
Selecting Keys for Fast Response 145
Selecting Which Keys to Accelerate 146
The Wild Key 147
Hot-Key Commands 147
ReDOS Command Buffer Startup File 148
Saving Conventional Memory 149
The Keyboard Accelerator and Other Software 149
Windows Environment 149
Compatibility Issues 150
Non-English-Language Keyboards 150

Appendix C ADVANCED USE OF THE SCREEN ACCELERATOR 153
Introduction 153
Advanced Parameters 153
Saving Conventional Memory 155
Application Compatibility 156
Compatible Files 156

Correcting Incompatibilities 157
Using the Screen Accelerator With DESQview 158
Screen Blanking With Mouse Movement 159
Controlling Flicker and Snow with CGA Adapters 159
Using Laptop Computers 161
Detecting ANSI.SYS 161
Alternate ANSI drivers 161

Appendix D ADVANCED USE OF THE PRINT SPOOLER 163
Introduction 163
Advanced Parameters 163
Reducing Use of Conventional Memory 167
Disabling Features to Save Memory 168
Moving Program Code to Save Memory 169
Providing the Largest Possible Spooler Buffer 170
The Pop-Up Menus 171
Introduction 171
Main Menu - No Data Spooled 172
Main Menu - Data Spooled 183
Invalid Entries 185
Detecting Errors 185
Detecting Full Spooler Memory 186
Special Features 188
Pagination Modes 188
Single-Sheet Mode 189
Auto Page-Break Mode 191
Output Rate 191
Spooling Two Devices 193
Serial Printers 195
Using a Serial Printer 195
Serial Characteristics 196
Serial Characteristics Parameters 196
Examples of Serial Parameters 198
Using the Spooler With Other Software 199
Other Resident Programs That Use Pop-ups 199
Borland's Sidekick and Sidekick Plus 200
Environments 200
Hercules Graphics 204

Appendix E HARDWARE & SOFTWARE SUPPORTED 205
Hardware Supported 205
IBM Personal Computers and Compatibles 205
Super PC-Kwik and Bernoulli Drives 205
Super PC-Kwik and Large Disk Drives 207
Using Super PC-Kwik with RLL, ESDI, IDE and SCSI Disk Controllers 208
Using Super PC-Kwik With SyQuest and Plus Passport Removable Disk Drives 209
Disk Types Not Supported 210
Accelerator Hardware on PC and XT Computers 210
Software Supported 210
RAM Disks and Print Spoolers 211
Power Pak and Microsoft Windows 3.0 211
Power Pak and DESQview 216
Communication Software and Extended Memory 217
Networks 218
The DOS VERIFY Command 218
Expanded Memory Simulators 218
DOS FASTOPEN 219

Appendix F ACCESSING ASCII FILES 221
Displaying READ.ME Files 221
Printing a READ.ME File 222
Batch Files 222
Executing Power Pak Automatically 222
Creating and Modifying Batch Files 223

Appendix G DISK BENCHMARK TESTING 227
What is Benchmark Testing? 227
Using Benchmark Programs to Test Cache Software 228
Using Data Transfer Rate Tests 229
Benchmark Testing and Cache Sizes 230
File Processing Throughput and Seek Times 231
Some Commonly Used Benchmark Programs 232
Peter Norton's System Information (SI) 232
PC Magazine's Benchmark Diskette 232
Multisoft's BENCHPCK for Benchmark Testing 233
RUNBENCH Parameters 235

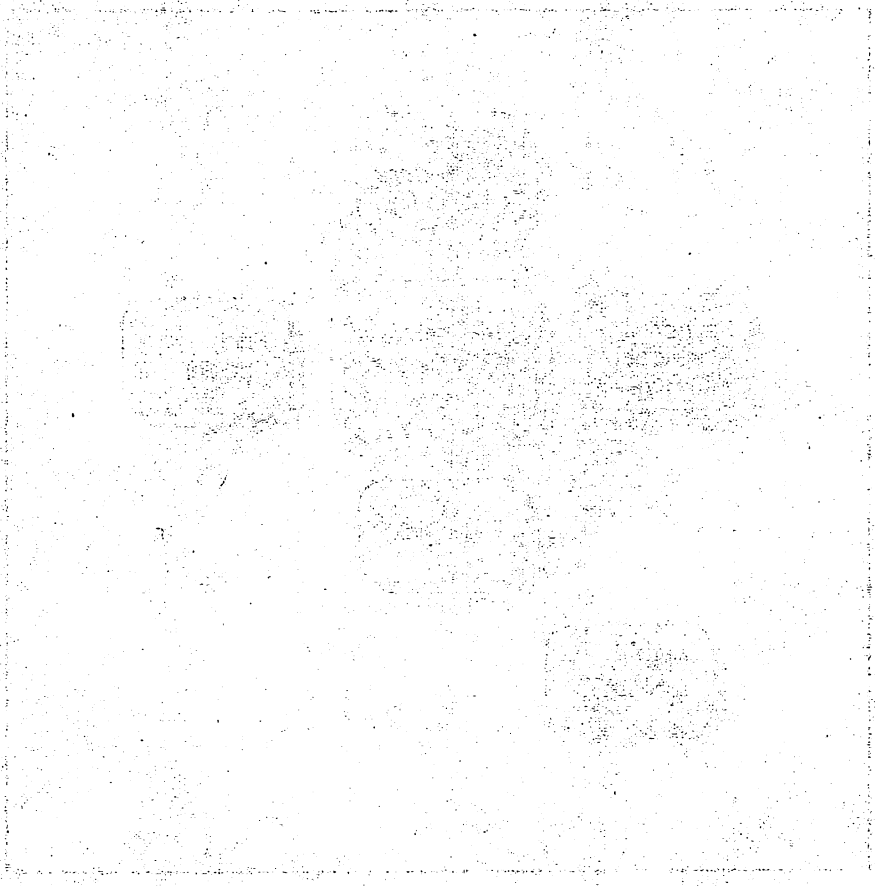
Appendix H ERROR MESSAGES 237
Super PC-Kwik 237
Errors: Loading Continues 237
Errors: Loading Stops 239
Warnings 242
RAM Disk 245
Keyboard Accelerator 245
Screen Accelerator 249
Print Spooler 252
Run-Time Status Messages 259
Run-Time Error Messages 260

Appendix I TROUBLESHOOTING & TECHNICAL SUPPORT 261

Appendix J USING UPPER MEMORY BLOCKS OR EXPANDED MEMORY FOR PROGRAM CODE 269
PC or XT Class Systems Based on the 8088 Processor 270
80286-Based Processors 270
80386- or 80486-Based Processors 272
Summary: Code Hiding & Memory Lending for Super PC-Kwik 274

PARAMETER SUMMARY 277
Super PC-Kwik Disk Accelerator Parameters 277
RAM Disk Parameters 278
Keyboard Accelerator Parameters 279
Screen Accelerator Parameters 281
Print Spooler Parameters 282
BENCHPCK Parameters 283
PCKMAP Parameters 284

GLOSSARY 285
INDEX 291



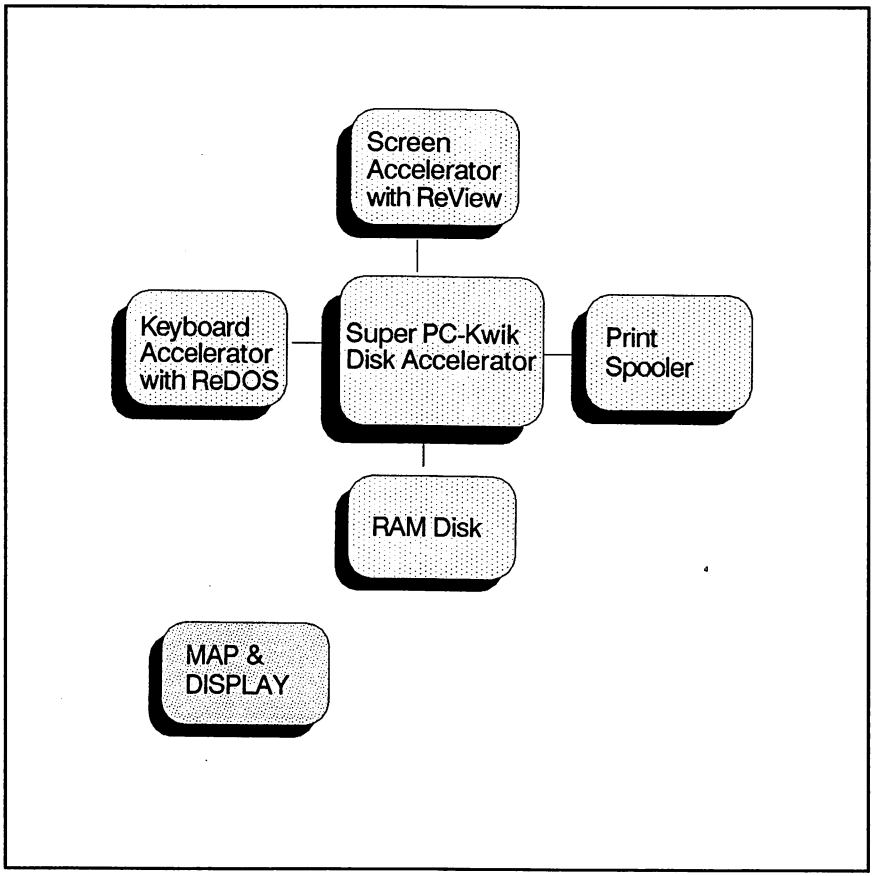


Figure 1: The Power Pak Products

Section 1

INTRODUCTION AND OVERVIEW

Thank you for purchasing the PC-Kwik Power Pak by Multisoft. Our goal is to speed up every aspect of your computing environment, and do so in the simplest and most logical way possible. The Power Pak improves the performance of your computer beyond what you would expect from a software package. Power Pak accelerates your hardware, your DOS functions, your applications, and many aspects of your productivity.

What's in Power Pak?

The PC-Kwik Power Pak provides five separate and complementary programs to provide extra power and performance to any IBM-compatible computer using DOS 2.0 or later. These modules are:

1. **Super PC-Kwik Disk Accelerator**
   The industry's best disk cache program and the heart of the Power Pak. It dramatically increases the speeds of diskettes, hard drives, and many cartridge drives. It automatically shares memory allocated for its cache buffer with the other programs in Power Pak and loans memory to other programs such as spreadsheets, windowing environments and word processors. Its cache hit indicator immediately shows you how often your applications get data from the cache instead of from the disk. An information hot key provides measurements of the cache's effectiveness at the touch of a key.

2. **PC-Kwik RAM Disk**
   A solid-state disk in RAM that gives RAM access speeds to programs and work files. It creates disks with sizes up to 16 megabytes, yet does not use RAM for the file space until files are created. Like the other Power Pak modules, it shares the cache buffer area.

3. **PC-Kwik Keyboard Accelerator with ReDOS**
   An accelerator for your keys and cursor movement. You save time spent waiting for your cursor to move around the screen by setting the key repeat rate and the key acceleration rate to your preference. The ReDOS command editor keeps a list of DOS commands you have already used, for faster, easier operation from the DOS prompt.

4. **PC-Kwik Screen Accelerator with ReView**
   A video accelerator that reduces the time needed for many programs to write to the screen. Your text-based programs run faster and you spend less time waiting for information to be brought to your screen. Screen blanking helps prevent monitor burnout and the ReView scroll-back feature lets you capture and recall text that goes by too fast to read.

5. **PC-Kwik Print Spooler**
   A printer spooler program that quickly takes printer output and, by buffering it in RAM shared with the disk cache, shortens to seconds the amount of time you wait for programs to output print data. It can spool up to 16 megabytes and automatically compresses print data to make the most effective use of the available memory.

Power Pak is modular so you can select which of the utilities are appropriate for your computing environment. Many people find all five modules indispensable for their work. You can pick and

choose which features of each program to use, enabling and disabling them as needed.

Power Pak also includes several utilities, including a memory mapping utility called PCKMAP, a program which tests your expanded memory manager for compatibility, called TESTEMM, and a file viewing utility called DISPLAY.

PCKMAP makes it easier to find out what memory-resident programs are running and how much memory, of which type, they use. You can read more about PCKMAP in Section 2.

TESTEMM verifies whether or not your expanded memory manager implements all the functions in the LIM 4.0 specification, to determine whether your expanded memory manager is fully compatible with Super PC-Kwik. You can read more about TESTEMM in Section 2 as well.

DISPLAY provides an easy way to look at the contents of ASCII text files. These two utilities run independently of the other Power Pak programs. We discuss DISPLAY in more detail in Appendix F.

A benchmarking program called BENCHPCK is included, too. Disk benchmark testing in general, and the BENCHPCK program in particular, are covered in Appendix G.

Memory Sharing and Lending

When Super PC-Kwik loads, it allocates memory to its cache buffer. It *shares* this memory with the other programs in Power Pak, reserving the amounts you specify for such things as print spooling and the RAM Disk. Super PC-Kwik also *lends* the expanded or extended memory used for its cache buffer to other application programs, such as spreadsheets and windowing envi-

ronments, as they need it. Super PC-Kwik monitors requests from Power Pak and other programs and gives out memory when it is requested. It takes the memory back when the others no longer need it. Other programs don't need to do anything special; Super PC-Kwik handles all the work necessary so that memory is available. This dynamic, efficient, automatic memory use is the key to Power Pak's power and simplicity.

Because the other Power Pak programs share memory with the cache buffer, Super PC-Kwik must be loaded for any of the other four programs to work. In addition, the cache buffer should be large enough to accommodate the RAM disk size you request and still have enough memory left over to share and lend. If you specify a particular cache size when you load Super PC-Kwik, be sure it is large enough for these requirements. Normally, Super PC-Kwik automatically figures out the optimum amount of memory for its cache buffer, given your system's configuration. You rarely need to request a specific cache size.

Using Expanded and Extended Memory

If you have extended memory in your 80386 system, Super PC-Kwik uses it directly, or with the help of a driver which conforms to the Microsoft eXtended Memory Specification (XMS). If you wish Super PC-Kwik to use the extended memory as expanded memory, you must be running an expanded memory manager. Super PC-Kwik does not function as an expanded memory manager. You need separate software for this, like Qualitas' 386MAX or Quarterdeck's QEMM. The expanded memory should conform to the Lotus/Intel/Microsoft (LIM) 4.0 specification; if you are using LIM 3.2, Super PC-Kwik uses the expanded memory and shares it with the other Power Pak programs, but it cannot lend out LIM 3.2 expanded memory.

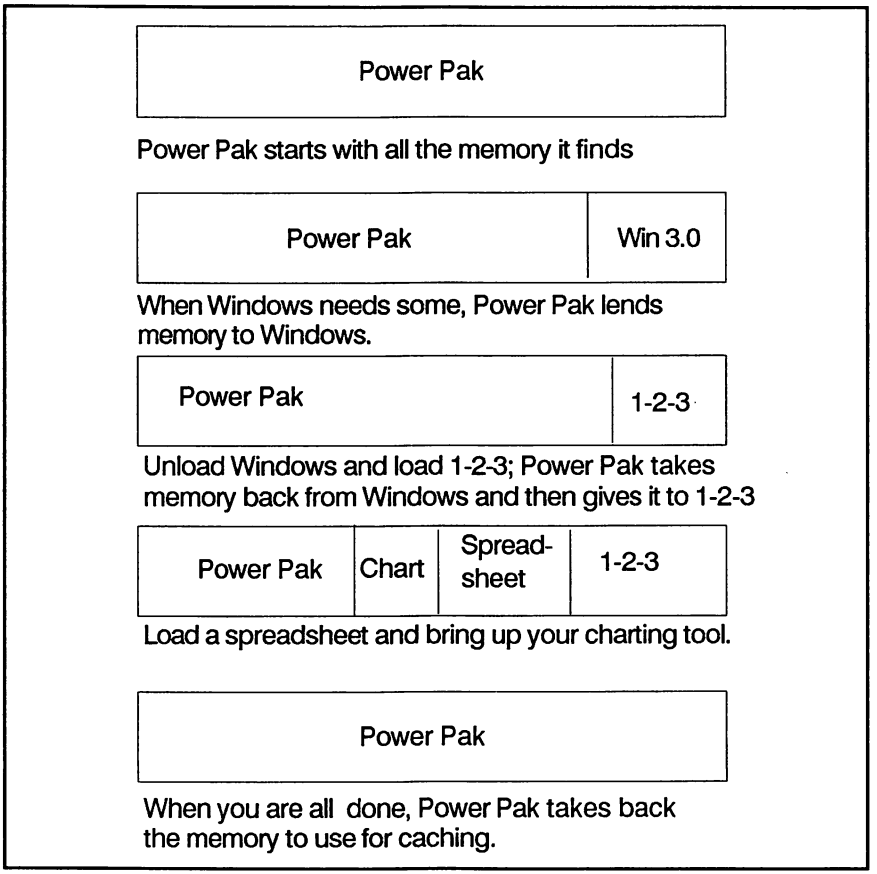

Power Pak
Power Pak starts with all the memory it finds
Power Pak
Win 3.0
When Windows needs some, Power Pak lends memory to Windows.
Power Pak
1-2-3
Unload Windows and load 1-2-3; Power Pak takes memory back from Windows and then gives it to 1-2-3
Power Pak
Chart
Spread-sheet
1-2-3
Load a spreadsheet and bring up your charting tool.
Power Pak
When you are all done, Power Pak takes back the memory to use for caching.

Figure 2: Automatic Memory Lending

Saving Conventional Memory

Besides saving conventional memory by sharing it with each other, the Disk Accelerator, Keyboard Accelerator, Screen Accelerator and Spooler can all move parts of their program code to either Upper Memory Blocks (UMBs) or expanded memory. This can save even more conventional memory. Your system must be

configured properly to support this. See Appendix J, *Using Upper Memory Blocks and Expanded Memory for Program Code*, for more details about the kind of system and memory managers you need to do this.

Manual Organization

This manual explains how to install and load the Power Pak programs and describes the use of all five programs. The first section in the front is called *If You Are in a Hurry*. Those brief instructions allow experienced PC users to get up and running quickly.

Section 1 is this Overview of the manual and it tells you what is in each Section or Appendix, covers documentation conventions used here, and points to other sources of information about our programs. Section 2 explains how to install Power Pak and shows you how to try out each of the Power Pak programs.

Sections 3 through 7 each explain the basics of one of the Power Pak programs. Section 3 gives you details about the Super PC-Kwik Disk Accelerator; Section 4 covers the RAM Disk; Section 5 discusses the Keyboard Accelerator; Section 6 the Screen Accelerator; and Section 7 the Print Spooler. Each section has an introduction and a feature overview with background information on the program, the basic parameter options, commands, and hot keys.

Appendices A, B, C, and D discuss more advanced technical information for each program, including advanced parameters and usage tips.

Appendices E-J cover information on the hardware and software that the Power Pak programs work with, accessing ASCII files,

benchmark testing, and troubleshooting. There is also a list of error messages and a discussion of the specifics of moving code to UMBs or expanded memory. At the end are a parameter summary, a glossary and an index. The Power Pak package also contains a quick reference card.

For More Information

Additional files on the distribution disk, called READ.ME files, contain information that became available too late to include in this manual and details about specific hardware and software compatibility issues. We encourage you to read them before using Power Pak. There is a separate READ.ME file for each program, each ending in "READ.ME". The files are:

- DISKREAD.ME for the Super PC-Kwik Disk Accelerator
- RAMDREAD.ME for the RAM Disk
- KEYREAD.ME for the Keyboard Accelerator
- SCRNREAD.ME for the Screen Accelerator
- SPLREAD.ME for the Print Spooler
- BNCHREAD.ME for the benchmarking program

These files can be displayed during the installation process or you can refer to Appendix F for more information on accessing these files.

Terminology

In this manual, we use several terms that may or may not be familiar to you. For more definitions, see the Glossary.

Kbytes: A measure of memory or disk capacity; a Kbyte is 1024 bytes of information; a byte is 8 bits long.

Mbytes: A measure of memory or disk capacity; an Mbyte is 1024K bytes of information.

Disk: A mass storage device for your computer; for our products, disks comprise hard disks, floppy disks and removable cartridge devices.

Disk cache: The Super PC-Kwik Disk Accelerator program; in this manual, we may refer to the same program as "the disk cache", "the Disk Accelerator" or "Super PC-Kwik" but they all refer to the disk caching program included with Power Pak.

Conventions in This Manual

We use several typographic conventions in this manual to make it easier for you to use.

When You See	It Means
COMMANDS	Text you must type in exactly as shown, usually DOS commands or directory or file names.
italic face	The general form of something you must specify; for instance *d* stands for the drive designator in general. You supply the letter of your specific drive, such as A, B, or C.
<key>	Represents keys on your keyboard other than the letter and number keys, for instance, <Esc>.

Getting Help

If you have any difficulty using the Power Pak programs, first check this manual and the READ.ME files for possible solutions, tips, or warnings. If you have a technical problem, read Appendix I first. Then, before calling the technical support phone number listed inside the front cover of this manual, try to have the computer available and the problem carefully documented. At the end of Appendix I is a list of the things that Technical Support should know to be of most help to you.

Don't forget to send in your registration card. Becoming a registered user is the best way to receive the latest information about upgrades and updates to your software. It also entitles you to a free subscription to *Power Report*, the Multisoft customer newsletter.

We hope you enjoy PC-Kwik Power Pak and experience the true power of your personal computer. If you have any suggestions, comments, or tips please send them to us either by FAX or mail. See our fax phone number and address inside the cover page of this manual. You can also reach us on CompuServe. Our email ID is 76004,151, or you can select section 14 of the PCVENA forum.

Section 2

INSTALLING POWER PAK

This section explains how to load the Power Pak programs onto a disk. Quick installation instructions are in the front of this manual for experienced users who are in a hurry. More detailed information on each program is available in Sections 3-7 and the Appendices.

Installing the Software on Your Disk

Your distribution diskettes contain an installation routine called INSTALL. It sets up the necessary files on a disk you choose, adds a command line, if you choose, to your AUTOEXEC.BAT file, adds drivers if needed to your CONFIG.SYS file, and allows you to review the DISKREAD.ME file. INSTALL puts the files in a subdirectory named \PCKWIK or in a subdirectory you name.

To run INSTALL, put the master diskette in drive A or B. If you are using drive A, type:

```
A:
INSTALL
```

Warning: You cannot run two disk caches on one machine. Remove any other disk caches before installing Super PC-Kwik! Check both your CONFIG.SYS and AUTOEXEC.BAT files for commands that may install a cache when your system boots and comment those lines out. Then reboot your machine before you install Super PC-Kwik.

Note: If you are installing Power Pak onto a laptop computer with a monochrome display, use INSTALL /BW.

The INSTALL routine asks several questions about how you want to configure Power Pak on your machine. Use the arrow keys to highlight your choice for each question, and press <Enter> to choose.

One question is whether you want to INSTALL to add lines to the file AUTOEXEC.BAT so that Power Pak loads each time you boot your system. These lines call the POWERON batch file. Another question is whether you want the INSTALL program to change your CONFIG.SYS file. You can choose to change these files, or have the installation program create .NEW files so you can look at the changes and make them yourself if you prefer.

Note: If you asked to have Power Pak load each time your system boots, but it doesn't seem to do so, be sure the command is always being executed. If your AUTOEXEC.BAT file invokes a menu, a shell program, or another batch file, you may need to move the command line so it is above the commands that invoke these other programs. Otherwise the command may never be executed. See Appendix F for instructions on how to edit an ASCII file such as AUTOEXEC.BAT.

The installation program also checks to see if you are running an expanded memory manager. If you are, it recommends that you run TESTEMM to determine whether your expanded memory manager is fully compatible with Super PC-Kwik.

The TESTEMM Program

Some expanded memory managers, which do not implement the full LIM specification for expanded memory managers, are not fully compatible with Super PC-Kwik. Power Pak now includes a program which tests your expanded memory manager and discovers whether it fully supports all of Super PC-Kwik's features. The testing program verifies whether or not your expanded memory manager allows calls to its functions to be reentrant. Not all expanded memory managers implement their functions the same way, and differences can affect Super PC-Kwik.

Memory managers known to be fully compatible with Power Pak include recent versions of QEMM from Quarterdeck, 386MAX from Qualitas, and EMM386 from Microsoft. Other memory managers may not be compatible. Your installation disk contains a program named TESTEMM.COM. By running this program after you install Power Pak, you can verify whether your expanded memory manager is compatible.

To run TESTEMM, change to the directory you installed Power Pak in and type:

```
TESTEMM
```

TESTEMM may produce one or more of the following messages:

1. "Testing your expanded memory manager. This test may run for up to 30 seconds."

2. "Expanded memory manager appears compatible with Super PC-Kwik."

3. "No expanded memory manager was found. We recommend that you use Extended or Conventional memory when you load Super PC-Kwik."

   TESTEMM could not identify an expanded memory manager on your system or could not find an EMS page frame, and therefore the test did not run.

4. "Not enough expanded memory was found to run this test. We recommend that you use extended or conventional memory when you load Super PC-Kwik."

   TESTEMM requires 64K of expanded memory to use as a test buffer; it could not find this minimum, and therefore the test did not run.

5. "Your expanded memory manager failed. We recommend that you use extended or conventional memory when you load Super PC-Kwik."

   Your expanded memory manager returned an error, and therefore the test did not run.

6. "Your expanded memory manager is not fully compatible with Super PC-Kwik. You may either use the /E parameter to use extended memory, or use the /7- parameter with the /A parameter to use expanded memory. Using expanded memory without the /7- parameter may result in compatibility problems."

If you see messages 3, 4, or 5, Multisoft recommends that you load Super PC-Kwik so it uses extended memory for caching. See Appendix A for details.

If you see message 6, you can use either expanded or extended memory for the cache buffers but if you load Super PC-Kwik in expanded memory, you must use the /7- parameter. See Appendix A for more information about this parameter.

Trying the Power Pak Programs

When the INSTALL procedure is finished, you can try out each of the performance modules. Reboot your computer, then change to the Power Pak subdirectory by typing:

```
CHDIR \PCKWIK
```

If you chose to have the Power Pak programs installed in another subdirectory, type the name of that subdirectory instead of typing \PCKWIK.

Note: If you didn't choose to have the INSTALL program add the \PCKWIK subdirectory to your system's PATH command, you may wish to do so now. See your DOS manual for details.

If you asked to have the Power Pak programs start automatically on reboot, you need to turn them all off first. Then you can try them out one at a time. To turn off the Power Pak programs, type:

```
POWEROFF
```

To get the best performance from your Power Pak programs, you should allot as much memory as possible to the Super PC-Kwik Disk Accelerator. The more memory allocated to Super PC-Kwik, the better the disk performance in most computer environments. By default, Super PC-Kwik automatically allocates as much memory as is available. See Section 3 for information about

changing the size of the cache, and Appendix A for tips on using the least amount of conventional memory while maintaining a large cache.

Trying the Disk Cache

First start Super PC-Kwik by typing:

```
SUPERPCK
```

The startup banner tells you how the cache set itself up in your system, including what type of memory was found and the amount used by Super PC-Kwik.

There are several ways to check the performance increase from Super PC-Kwik. If you used INSTALL, the \PCKWIK subdirectory contains a program that demonstrates and measures the effectiveness of Super PC-Kwik and your computer, with the cache both running and not running. To run the Multisoft benchmark program type:

```
RUNBENCH d:
```

where *d* is the letter of the drive on which to run the test. For this first test, use a hard drive if possible. To run on a diskette, be sure to use a formatted diskette with at least 300 Kbytes free. See Appendix G for more information on the Multisoft benchmark program.

You should see and hear substantially less disk activity when the cache is operating. See Section 3 for more details on using the disk cache.

Trying the Keyboard Accelerator

To load the Keyboard Accelerator, be sure that the Super PC-Kwik disk cache is loaded, then type:

```
PCKKEY
```

You probably are familiar with how your computer responds to your moving the cursor around. If you hold down a key, even at the DOS prompt, you should see it repeat much more quickly than before Power Pak. To really see the difference with the Keyboard Accelerator, try it out in your word processor.

If the keyboard seems too responsive, give yourself a few days to get accustomed to it. If it is still too fast, change the repeat rate or response time. See page 63 for information on how to do this.

A major feature of the Keyboard Accelerator is the ReDOS command editor. To try out ReDOS, press the up < ↑ > arrow key while at the DOS prompt. A pop-up window appears on your screen showing the last DOS commands you typed. The window shows 13 commands at the most, although many more can be stored in the command list. You can use the up < ↑ > and down < ↓ > arrow keys to move through the command list and to display the commands above and below the ones showing. Use the <Enter> key to select a command. Any command in the list can be edited and reused. See Section 5 for more details about using ReDOS and the Keyboard Accelerator.

Trying the Screen Accelerator

First, check the speed of your screen without the Screen Accelerator. Type:

```
DIR
```

This is the normal speed that DOS outputs to the screen, unless you have a program already running to speed up your screen.

Note: You should run only one program at a time that speeds up your screen. If you have another screen speed-up program running, unload or disable it before using the Power Pak Screen Accelerator.

Note: If you have a video Shadow RAM feature on your system, it does not interfere with the Screen Accelerator. However, on some machines disabling the Shadow RAM increases the amount of extended memory available for the cache buffer and the other Power Pak products.

To start the Screen Accelerator, be sure that the Super PC-Kwik Disk Accelerator is loaded first, then type:

```
PCKSCRN
```

Try out the Screen Accelerator by typing:

```
DIR
```

The directory information should scroll by much faster than before the Screen Accelerator was loaded.

If the directory goes by too quickly, use the Screen Accelerator's ReView feature to scroll back and see video data that has scrolled off the top of the screen. Press the <ScrollLock> key and then use the up arrow < ↑ > or the down arrow < ↓ > keys to scroll back and review information that scrolled off the screen. Press <ScrollLock> again to leave ReView. See Section 6 to find out about its different modes of operation.

If you don't use the keyboard for five minutes, the screen blanks. You can also force the screen to blank using the <Alt> <Shift> <B> hot-key sequence. You can set the amount of time before the screen blanks by setting the /B: parameter (see Section 6 for details). To restore the screen, press any key. If you don't want to pass a character on to DOS or your application, you can always use the <Left Shift> key to safely restore the screen.

Trying the Print Spooler

If your printer is attached to the standard DOS parallel port, LPT1, first be sure the Super PC-Kwik program is running, then start the spooler by typing:

```
PCKSPL
```

If the printer is connected to a different parallel port, or to a serial port, see Section 7 for more information.

Try invoking the Spooler with the <Alt> <Shift> <PrintScrn> hot key and look at the pop-up window that controls the Spooler, which should look like this:

```
PC-Kwik Print Spooler.  Ver. xxxx
     ** NO DATA SPOOLED **
LPT1:       0 K bytes spooled.
       xx,xxx K bytes available.
Resume  Modify  Insert  Disable
==> Exit and resume spooling
```

Now leave the pop-up window by pressing <Esc> and print a file with your word processor. While the file is printing, use the hot key to see how the spooler uses cache memory, how the pop-up box stops the printing momentarily (unless your printer has its

own buffer), and how you can give it special commands, or cancel what you spooled.

Trying the RAM Disk

If, during the installation procedure, you had the routine add the command to your CONFIG.SYS file that sets up a RAM Disk, you now need to reboot your system to try it. To find out the drive letter for the RAM Disk, reboot and look at the Super PC-Kwik sign-on screen or type:

```
SUPERPCK /P
```

The Super PC-Kwik sign-on screen shows the drive letter for the RAM disk. Because the RAM disk already resides in RAM, it is not cached by Super PC-Kwik.

You can copy files, list directories, check the size, and delete files, just as you would on a physical disk. Super PC-Kwik makes sure the RAM Disk takes memory only as it is used.

Trying PCKMAP

To see how much memory you have, what kinds of memory you have, and what programs are using the memory, type:

```
PCKMAP
```

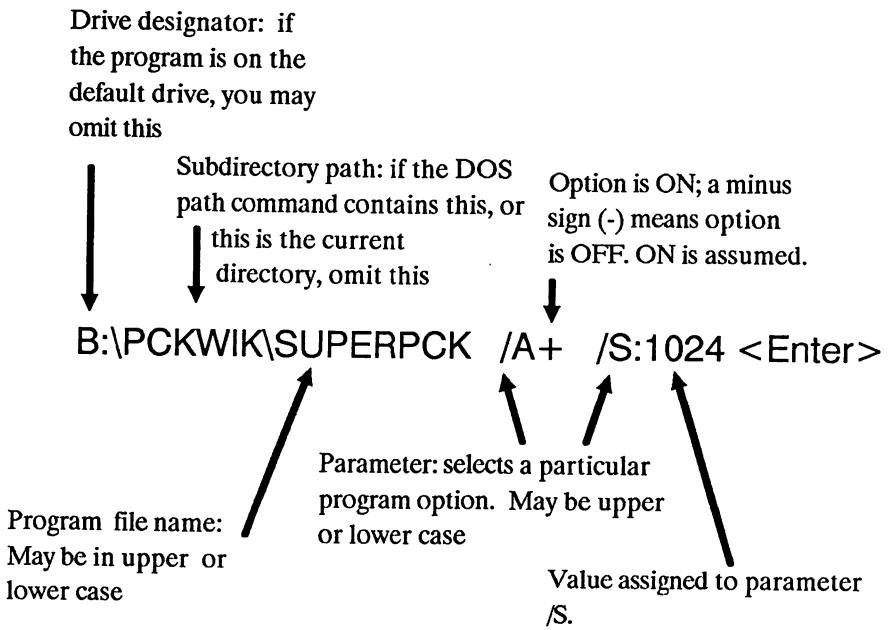
The program displays your memory usage, and pauses when the screen is full so you can see what is displayed. Press any key to continue the display.

If you are using XMS memory and the display seems very slow, type PCKMAP /X- to turn off the checking for XMS handles. The

PCKMAP program automatically checks for XMS handles by default and this can slow the display down.

Command Line Conventions

The command for all of the Power Pak programs takes the following general form:


Drive designator: if the program is on the default drive, you may omit this
Subdirectory path: if the DOS path command contains this, or this is the current directory, omit this
Option is ON; a minus sign (-) means option is OFF. ON is assumed.
B:\PCKWIK\SUPERPCK /A+ /S:1024 <Enter>
Program file name: May be in upper or lower case
Parameter: selects a particular program option. May be upper or lower case
Value assigned to parameter /S.

You can specify multiple parameters in one command. Each parameter begins with a /, with or without a space before each /. There is no limit to the number of parameters which can be specified in one command line, except the DOS limit of 128 characters per command line.

The program chooses default values for parameters you do not specify in the command. Therefore, you usually only need to specify a few parameters, if any. When the program is loaded it displays each parameter in effect.

Loading the Power Pak Programs

There are several ways to load Power Pak programs. All these ways involve a DOS command which may be followed by one or more parameters. The parameters available to each program are discussed in the section and appendix devoted to that program.

You can load the Power Pak programs one of these three ways:

1. *Manual loading.* Simply type the commands, with any parameters, from the DOS prompt. The Power Pak programs are loaded into memory and remain resident until unloaded.

2. *Batch file loading.* Place the commands, with any parameters, in a batch file. Whenever this batch file is invoked, the Power Pak programs load. The INSTALL program sets up two batch files for you in the \PCKWIK subdirectory:

   POWERON.BAT
   POWEROFF.BAT

   POWERON loads the Power Pak programs and POWEROFF unloads the programs. You may want to edit the POWERON file, adding parameters to finetune the Power Pak programs for your system. See Appendix F for more information on editing batch files.

3. *Automatic loading.* Place the Power Pak commands or the POWERON command in a special batch file in the root directory. This file is called AUTOEXEC.BAT and it is automatically

invoked each time your system is restarted. Power Pak loads automatically. When you use the INSTALL program to copy the Power Pak files to your boot disk, you are given the option to have Power Pak started from your AUTOEXEC.BAT file. You may want to add parameters to these commands to change the way the Power Pak programs run. See Appendix F for information on editing batch files.

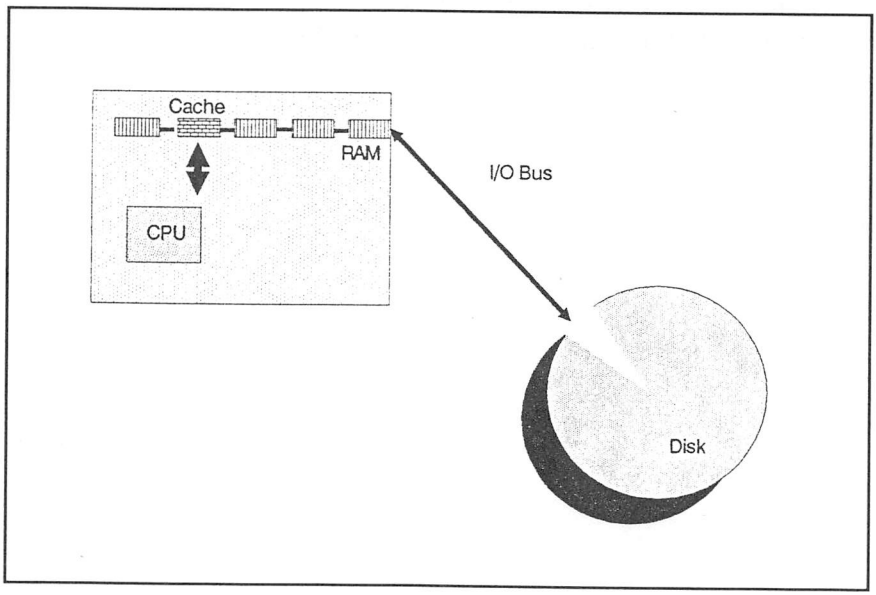


Figure 3: Retrieving data from the RAM-based cache is much faster than retrieving it over the I/O bus from the disk.

Section 3

SUPER PC-KWIK DISK ACCELERATOR

Introduction

The main purpose of personal computers has been to increase productivity. As we use our personal computers more, we notice that we spend more and more time waiting for the computer to finish what it is doing. As the amount of data grows, it takes the computer longer and longer to find it and retrieve it from the disk.

We can increase the speed at which large amounts of information are found. The technique is called disk caching.

What is a Disk Cache?

A disk cache is a collection of copies of recently used disk sectors kept in random access memory (RAM). A disk cache can reduce the number of times the application physically accesses the disk and dramatically speed up the performance of the application.

You might ask why disk caching software didn't become available for the PC until recently. At the time DOS was originally designed, disk caching was out of the question. Memory was still too expensive to seriously consider it, and the technology hadn't been converted from mainframes to personal computers.

Alternatives to Caching: Buffering and RAM Disks

DOS provides a technique similar to caching, called buffering. Like caching, buffering involves using RAM to improve the efficiency of disks. Since version 2.0, DOS has provided the option of specifying the number of buffers to be used for disk access. While buffering provides some performance improvement, it falls far short of what can be accomplished by a disk cache.

Another technology related to disk caching is called the RAM disk. A RAM disk is similar to a disk cache in that it takes advantage of extra memory to increase disk performance. RAM disk software creates a completely separate logical disk physically located in random access memory. Typically, you copy frequently used programs to the RAM disk when you start working, and when it is time to run one of these programs, it is loaded from the RAM disk rather than the physical disk. As a result, it begins executing in a fraction of the normal time.

While RAM disks make programs execute faster, there are several disadvantages:

1. You must anticipate which files are going to be used during a work session and copy those files to the RAM disk before you start working.
2. If a particular file is too large, you cannot use the RAM disk.
3. If you make any changes to files on a RAM disk, you must remember to copy them to a physical disk at the end of the session.
4. If a power failure occurs, or the computer hangs, you lose any changes you made to the files.

In contrast, a disk cache has several advantages:

1. You don't need to anticipate which files you are going to use before you start. The cache automatically saves copies of any data written to or read from a disk.
2. You don't need to have all the data in the cache at one time to see a speed improvement. If there is more data than cache space, the most frequently used portions of the data are kept in the cache.
3. Changes to the data are automatically written to the physical disk, eliminating the risk of keeping data in RAM.

A disk cache automatically provides most of the performance benefits of a RAM disk without the many disadvantages associated with its use.

There are certain applications where a RAM disk works well with a cache. Multisoft's PC-Kwik Power Pak includes a RAM disk which is integrated with the cache to provide the best of both worlds.

Disk Cache Theory

A disk cache works by accumulating copies of frequently used disk locations (called *sectors*) in memory. As new sectors are used, it keeps a copy of them as well. There isn't always room for a copy of a new sector and the cache must determine which sector copy should be removed from the cache. The cache replaces the copy of the least recently used sector with a copy of the most recently used sector.

Disk Caching and Applications

How does disk caching affect applications? The answer varies with the application, the nature of the disks you are using, and the size of the cache. Disk caches provide dramatic improvement in diskette-based systems. In these systems, retrieval times in a database can be improved by a factor of 6 or more and sorts can be improved by a factor of 2 or more. In hard disk systems, retrievals and sorts can be improved by a factor of 2, 3, or more.

Performance improvements are not restricted to databases. Many applications benefit: less time is used for accounting packages, spelling checkers, overlaid applications, DOS batch files, spreadsheets, CAD programs, desktop publishing, compilers, and linkers. The exact improvement varies according to the application's use of the disk, the amount of data being used, how often that data is accessed, and the size of the cache.

Disk Cache Size

How big should a disk cache be? The easy answer is the bigger the better: give the disk cache whatever memory your applications don't require. In addition, most of the memory taken up by DOS buffers is better allocated to the cache.

A cache size of 64K bytes usually provides a noticeable improvement; a cache of 128K bytes provides an impressive improvement. If you are using applications that access a lot of data or if you frequently switch from one application to another, a larger cache is desirable.

Note: A testing program (called a benchmark) provided with the Super PC-Kwik program measures your disk performance before and after caching. If you run the benchmark program with a sin-

gle size test file you might conclude that a limited amount of cache memory is needed. But in a less controlled environment large cache sizes make a significant difference, especially if large or numerous files are accessed frequently.

Disk Cache and Processor Speed

Does a disk cache have an impact on AT-, 386-, and 486-class systems, which include both faster processors and faster hard disks? Yes. The performance boost of a disk cache in fast computers is even more impressive, because the faster systems include processors which execute instructions many times faster than the hard disk. Without a disk cache, the faster processor spends most of its time waiting on the disk. The disk cache function itself is sped up by the faster 80286, 80386, and 80486 processors and by faster RAM access speeds in these machines.

Beyond a Standard Disk Cache

A disk cache improves the performance of a system by cutting down on the number of physical disk reads. In many applications, *writing* to a disk is just as important as reading, if not more so.

What can a disk cache do for disk writing? A standard disk cache can do very little. A cache can occasionally improve writing performance by comparing what is being written with its sector copies before writing takes place. If there is a match, it simply skips writing.

This seldom improves performance very much, because applications don't often write the same data to the same sector. Even if you request that something be saved without changing, the application usually writes the information to a fresh disk file and then renames it when the save is complete.

Super PC-Kwik goes beyond a standard disk cache. It incorporates a variety of proprietary techniques that improve disk writing throughput. These techniques:

1. Increase the amount of information that is written during each disk rotation.
2. Reduce the number of times the disk heads must move.
3. Allow the application to execute at the same time the disk is writing.

Super PC-Kwik does not change the format of the information on the disk and does not delay writing the data to the disk.

Super PC-Kwik's advanced support of disk transfers can provide as much as twice the performance boost of a standard disk cache. Where do you notice this increase in performance? The most dramatic effect occurs when you use an application that must sort and index information on disk, usually in the process of generating a report.

The advanced support of disk writes also pays off when saving and retrieving information on diskette. Try loading and saving a sequence of spreadsheets. The effect is particularly dramatic when the size of the cache is larger than the sum of the spreadsheet sizes. Super PC-Kwik also provides advanced support of disk writing when you copy files from hard disk to diskette.

Sharing and Lending Memory

One problem with most disk caches is that once you allocate memory for your cache, that memory is unavailable for your other programs. Super PC-Kwik handles this by automatically changing the size of its cache buffer as other programs need to use memory. Unless you request a specific cache size or explicitly reserve mem-

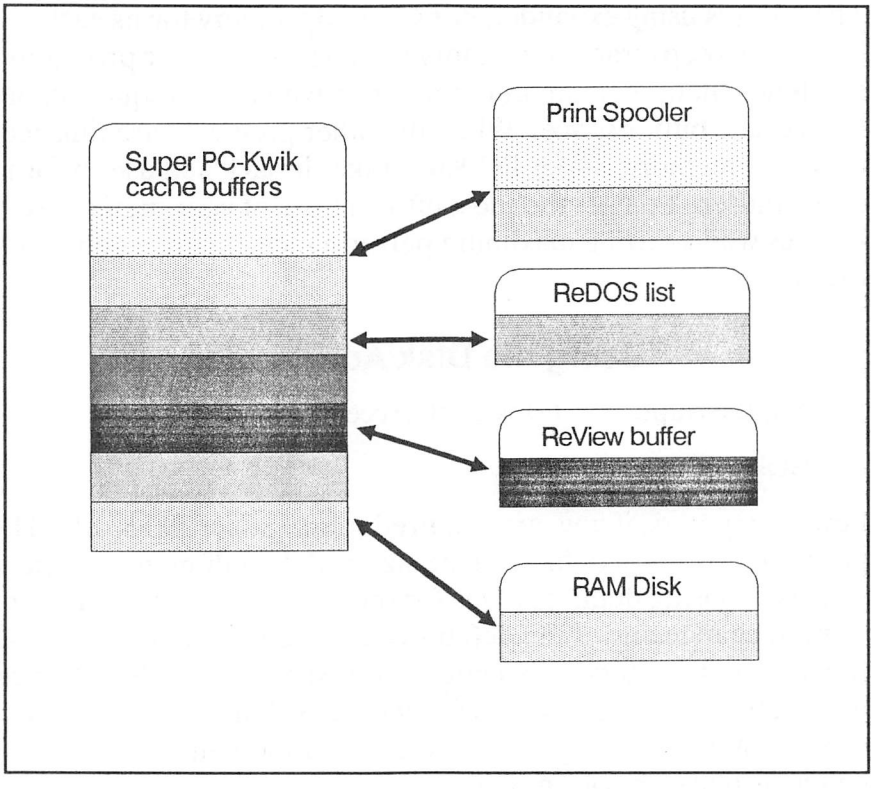


Figure 4: The disk cache shares its buffer space with other Power Pak programs.

ory for other programs, Super PC-Kwik allocates as much memory as it can of whichever type is available. It shares conventional, expanded, or extended memory space with the other programs in Power Pak as they need it, and it makes sure that the amount of memory you have reserved for the RAM Disk, the ReView buffer and the ReDOS command list is always available.

Then, if it is using expanded or extended memory for its cache buffers, it keeps track of memory requests from other programs and lends them that amount of memory when they request it, out of its cache buffer space. When the other programs are finished using the memory, Super PC-Kwik takes it back and uses it for its cache buffer. You get the most efficient use of your memory resources while getting maximum performance enhancement from the cache.

Using the Disk Accelerator

To load the Super PC-Kwik Disk Accelerator, type:

```
SUPERPCK
```

Few parameters, if any, are required to run Super PC-Kwik. The program chooses a default cache size and default memory type as well as choosing default values for the other parameters. If you want to change any of the default values the program chooses, see the basic parameters, listed later in this section, and the advanced parameters listed in Appendix A, which explain each parameter option. When the program loads, a startup screen like the one below displays on your monitor.

The cache automatically selects the memory type if you enter the command with no additional parameters. First it looks for expanded memory. If it is not found, it looks for extended memory. If that is not found, it creates a cache in conventional memory. If you prefer to specify which type of memory is to be used for the cache buffer, use the /A, /C or /E parameters. See the *Parameters* section later in this chapter for a description of the parameter and its options.

```
Super PC-Kwik (R) Disk Accelerator Version 4.1x, S/N 000000
Copyright 1986 - 1991 Multisoft Corporation, All Rights Reserved.
Program licensed exclusively for use on a single computer.
Subset of program (SUPERPCK.SB6) loaded.

 Following is a list of the parameters in effect:

  /D+ Advanced support of diskette transfers.
  /H+ Advanced support of hard disk transfers.
  /B+ Perform batch copies to/from cache.
  /O- Standard algorithm for advanced support.
  /Q- Return DOS prompt normally.
  /T+ Track buffering using a 17-sector buffer.
  /V+ Use volume change hardware.
  /W+ Check write requests for redundancy.
  /L+    800K reserved for lending.
           0K on loan.
         800K available.
  /A+  1,585K Expanded memory cache has been set up as follows:
                          UMB             Expanded
       DOS/Resident       N/A               576K
       PC-Kwik            16K             1,664K
       Available          65K                 0K
       Total              81K             2,240K
```

Loading From an Alternate Drive

You may wish to start the program from a drive other than the drive DOS considers the default. To do so, specify the drive letter followed by a colon before the program name. For example, to load the program in default memory from drive A while drive C is the default drive, specify:

A:SUPERPCK

Memory Use

When you load Super PC-Kwik, it checks your system to see what kinds of memory are available. It needs memory to use for its own program code. It needs memory to use for the track buffer, where it stores portions of the disk track before and after the specific sector on the disk that your application has requested. And it

needs memory for the cache buffer itself, the area where it stores data from the disk. Super PC-Kwik uses different types of memory differently, and it chooses memory based on what kind of memory you have available and how it can best use that memory to reduce the amount of conventional memory it uses. It also shares and lends memory depending on what kind of memory you have available. See Figures 4 and 5.

If the cache finds expanded memory in your system, it uses expanded memory for most of the program code and for the cache buffer. The track buffer and a small amount of code are in conventional memory. Your expanded memory manager decides where in expanded memory Super PC-Kwik resides. Super PC-Kwik shares expanded memory with the other Power Pak programs, and lends out expanded memory allocated to its cache buffer to other programs you are running that might need expanded memory.

If the cache finds extended memory in your system, it uses extended memory only for the cache buffer. The Super PC-Kwik program code and the track buffer reside in conventional memory. Super PC-Kwik uses extended memory from the top down. It shares extended memory with the other Power Pak programs, and lends out extended memory allocated to its cache buffer to other programs you are running that might need extended memory.

If you are using programs which use extended memory, Super PC-Kwik handles lending that memory automatically. We recommend that you use the RAM Disk that comes with Power Pak for best performance. If your extended memory programs don't seem

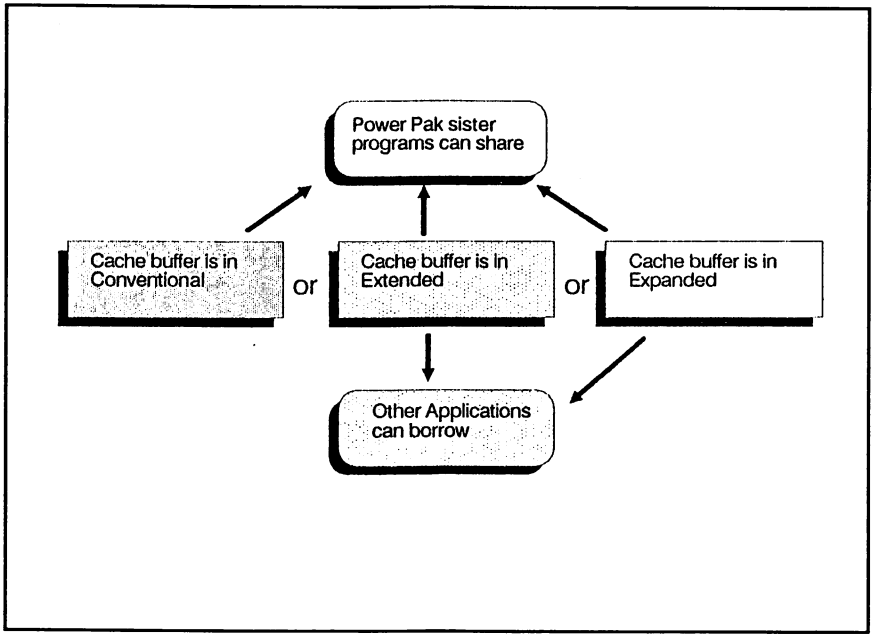


Figure 5: Memory Use

to borrow memory from the cache buffer properly, review the information on the /L parameter later in this chapter. You may also wish to read the discussion of the /Ex:*nnnnn* parameter in Appendix A.

If you have the choice between expanded and extended memory, expanded is usually the better choice because Super PC-Kwik occupies less conventional memory and performs slightly better. If you need to conserve as much conventional memory as possible, see the tips in Appendix A.

When the cache finds only conventional memory, it uses conventional memory for the program code, the track buffer and the cache buffers. It uses conventional memory from the bottom up, starting at the first available address. It shares conventional memory space allocated to its buffer with the other programs in Power Pak.

Subset Files

The \PCKWIK directory on your disk contains several subset files named SUPERPCK.SB*n*. A particular one of them is used for a particular hardware configuration and cache memory type. These files are used automatically to save conventional memory whenever possible. After the Super PC-Kwik program has scanned any parameters you have provided, it determines if a subset file can be used. If so, it attempts to load the appropriate subset file. If it successfully loads this file, it displays the following message:

Subset of program (SUPERPCK.SB*n*) loaded.

If it cannot find the subset file it displays:

Subset of program (SUPERPCK.SB*n*) not found.

If you are using DOS Version 3 or 4, this message means that the file was not in the same directory as the SUPERPCK.COM program file. If you are using DOS Version 2, this message means the file was not in the current directory nor in any of the directories listed in your path.

Because Super PC-Kwik operates normally without the subset files, you may choose to ignore a Subset not found message. Without the subset file, Super PC-Kwik uses somewhat more conventional memory.

If you are short of disk space, you can delete the extra subset files:

1. Jot down the name of the subset file which is loaded when your system boots or when you load Super PC-Kwik manually.
2. Copy all the SUPERPCK.* files from the \PCKWIK directory to a backup diskette.
3. Delete all the subset files (SUPERPCK.SB*n*) except the file actually being used.

Measurements

You can obtain measurements of how many disk accesses you save when you are using Super PC-Kwik. If you want to pop up the measurements onto your screen at any time using a hot key, use the /M parameter when you load the Super PC-Kwik Disk Accelerator:

```
SUPERPCK /M
```

Once it is running, you need only press both <Shift> keys at the same time, and a box shows you the number of disk accesses you requested, the number of times you accessed the cache instead of the disk, and the percentage of disk transfers you saved. You can use two other hot-key combinations if you prefer; see the Parameters list at the end of this section for more details.

If you don't want to set aside memory for the pop-up box, you can ask for the current measurments any time Super PC-Kwik is running. The syntax is the same; type SUPERPCK /M at the DOS prompt while the program is running.

Whichever way you choose to access the measurement information, you see this display.

```
Measurements are as follows:
      13,142 logical transfers.
       2,497 physical transfers
      10,645 transfers saved
          81 percent saved.
```

Where:

Logical transfers is the number of times DOS requested read or write operations to or from the drives being cached.

Physical transfers is the number of times the drives being cached were actually accessed.

Transfers saved is the number of physical accesses avoided because of the disk cache.

Percentage saved is the percentage of physical transfers that were avoided.

Note that measurements can only be displayed when your monitor is in text mode. If you run Windows, DESQview, AutoCAD, or other programs that take over the display and run in graphics mode, the measurements box won't pop up. You can use the new Windows Measurement Display program to show cache activity while you are in Windows, however.

Windows Measurement Display

To show cache activity while you are running Windows, go to the Windows Program Manager, select New... and add the new program item:

C:\PCKWIK\SUPERWIN.EXE

You can display either a text summary of cache activity with a dynamic bar graph or just a text summary. You can flush, enable or disable the cache from this display. And, when the Measurement Display is minimized, you can choose an icon which displays the percentage of cache hits or one which displays the Multisoft logo.

This Windows measurement display runs only with version 2.1 of Power Pak. If you try to run it with previous versions of Power Pak, an error message is displayed.

Cache Hit Indicator

Another way to see how many disk accesses you save is by looking at the cache hit indicator. This is an asterisk in the upper right-hand corner of your screen, displayed whenever your monitor is in text mode. It flashes every time data you request comes from the cache buffer instead of from the disk; it works much the same way as the activity light on your disk drive works, showing you how often you access the disk. To turn on the indicator while Super PC-Kwik is running, use the /* parameter when you load the disk cache. The default is for the indicator to be off. Note that the indicator will not show if your monitor is in graphics mode.

Displaying Parameters

After you have loaded Super PC-Kwik in memory, you may wish to see which options are being used by the program. To display the parameters currently in effect, type:

```
SUPERPCK /P
```

A list of the options in effect and a memory allocation table displays on your screen.

The Help Screen

If you forget the command line parameters, you can request a display of all parameters available by typing:

```
SUPERPCK /?
```

If Super PC-Kwik is not yet loaded, the help information displays loading parameters. If Super PC-Kwik is already loaded, the help information shows the parameters you can use while Super PC-Kwik is running.

Unloading

To unload the Super PC-Kwik program, enter:

```
SUPERPCK /U
```

Note: In DOS, resident programs must be unloaded in the opposite order from which they were loaded. If Super PC-Kwik was not the last resident program loaded, you must unload the programs loaded after Super PC-Kwik before you can unload the Super PC-Kwik program.

There are several commercial and public domain programs which allow you to request that resident programs be removed from memory. Do not use these programs to remove Super PC-Kwik from memory. Use the unload option instead.

Parameter Options

This section covers parameters you use most often when you load the Super PC-Kwik program and after it is running on your system. There are several example commands given after each list of parameters.

When You Load Super PC-Kwik

When Super PC-Kwik is loaded, it uses parameters to determine how to set itself up. Each parameter has a default value: the value that is used if you do not tell the program otherwise. To select values other than the defaults, add each parameter and its value to the command line.

If you wish to change the parameters after running the Super PC-Kwik program, use the /U parameter to unload the program and load it again using the new parameters.

If you want more control of the Super PC-Kwik program to fine-tune it to your particular system, see Appendix A for information on advanced parameters.

Note: *Some parameters have changed with version 2 of Power Pak.* Alternate parameters, which match the previous version, are listed to ease the transition to the new parameters. In future releases, these alternate versions may be eliminated. If you have batch files using the old parameters, you may wish to change them now.

/A+ Use *expanded* memory for Super PC-Kwik's cache. Expanded memory is memory which conforms to the LIM (Lotus/Intel/Microsoft) Expanded Memory Specification. Note that in order to lend expanded memory to

other programs, you must be running a LIM 4 driver. If you load Super PC-Kwik into expanded memory running a LIM 3.2 driver, Super PC-Kwik does not lend memory to other programs but does share expanded memory with the other Power Pak programs.

Note: When the cache is set up in expanded memory, Super PC-Kwik uses only a small amount of conventional memory, usually 10-20K bytes. The exact amount used depends on whether the /T+ parameter option is used and the size of the track buffer. For tips on how to conserve conventional memory, see Appendix A.

Default: /A+ when expanded memory is present and no other memory type is specified.

/C+ Use *conventional* memory for the cache code, track buffer and cache buffer. Conventional memory is normal memory up to 640K bytes. For tips on conserving conventional memory usage, see Appendix A.

Default: /C+ when no expanded or extended memory is available.

/EM+ Use *extended* memory for Super PC-Kwik's cache and minimize the amount of conventional memory used. Extended memory is memory installed above the 1024K-byte boundary on IBM ATs and other systems with 80286 or 80386 processors. (IBM sometimes refers to this memory as expansion memory.)

Note: If your applications use extended memory, the cache automatically handles lending memory to these programs. If your extended memory programs do not

appear to be borrowing memory from Super PC-Kwik properly, you may wish to check the description of the /L parameter below, or the /Ex:*nnnnn* parameter in Appendix A.

If you wish to place the cache in extended memory and also use data-communication software or other programs that may involve many hardware interrupts, read the *Communication Software and Extended Memory* section in Appendix A.

Alternate: /E+

Default: /EM when no expanded memory is available, extended memory is present, and no other memory type is specified.

/EP Maximize cache performance when Super PC-Kwik is in extended memory by using more conventional memory. Using /EP instead of /EM provides a performance gain, depending on the size of data transfers. However, it does so at the expense of using more conventional memory, and the performance gain is not always very large. We suggest you test your particular application if you are not sure about the trade-off between conventional memory usage and performance gain.

Default: /EM (minimize conventional memory usage)

/*+ Turn on cache hit indicator. To disable this indicator, use /*-.

Default: /*- (do not show indicator)

/L:*nnn* Enable the memory lending feature, and allow up to *nnn*K bytes of expanded or extended memory to be lent to other programs. The colon is required in this option. The maximum value for this option is determined dynamically by Super PC-Kwik based on the amount of memory you have reserved for the PC-Kwik RAM Disk. If there is not enough extended or expanded memory, Super PC-Kwik uses whatever amount is available, and lends that.

Default: One-half of what is available for the cache buffer after reserving what is needed for the PC-Kwik RAM Disk.

/L- Disable lending.

/M- Disable measurement pop-up display.

/M+ Use measurement pop-up display; hot key is <Shift><Shift>.

/M1 Use measurement pop-up display; use the alternate hot key <Alt><Shift>.

/M2 Use measurement pop-up display; use the alternate hot key <Ctrl><Alt><Shift>.

Default: /M- (disable measurement pop up)

/P+ On startup, display all parameters in effect for Super PC-Kwik.

Because the Super PC-Kwik program usually sets the default values for most of its parameters, it is a good idea to display a list of the parameters in effect when it is loaded. If you prefer, however, you may suppress this display by using the /P- parameter.

Default: /P+

/? Display a summary of these parameters. If you use the /? parameter with other parameters when you load Super PC-Kwik, the help summary displays, but the program does not load.

Examples

Example 1: SUPERPCK /L:512

Meaning: Automatically locate memory for the cache buffers then load the Super PC-Kwik program. Share all cache buffer memory with the Power Pak programs. If expanded or extended memory is available allow the Super PC-Kwik cache buffer to lend up to 512K bytes of expanded or extended memory as needed to other programs.

Example 2: SUPERPCK /C+

Meaning: Load the Super PC-Kwik program in conventional memory. Share memory only with the Power Pak programs. Reserve at least 480K bytes of conventional memory for other application programs.

Example 3: SUPERPCK /A+

Meaning: Load the Super PC-Kwik cache in expanded memory, using a small amount of conventional memory for code. Allocate as much expanded memory as is found for the cache, sharing it with the Power Pak programs. Lend to other programs as much as half the expanded memory as is available after reserving for the PC-Kwik RAM Disk.

Example 4: SUPERPCK /EM

Meaning: Load the Super PC-Kwik program in conventional memory and put the cache buffer in extended memory, using as much extended memory as is found and minimizing the conventional memory footprint; share the extended memory cache buffer with other Power Pak programs. If another program requests extended memory, allow it to borrow up to half of the amount of memory used for the cache.

While Super PC-Kwik is Running

These parameters can be used once Super PC-Kwik has been loaded and is running:

/D Disable the cache and reset its measurements to zero, leaving the cache in memory and turning off all caching functions.

/E Enable the cache after previously being disabled. There must be one enable command for each disable command issued in order for the cache to be enabled.

/F Flush the cache, clearing the memory of any disk data; reset the cache measurements to zero.

Note: Super PC-Kwik always keeps your disks up to date. Flushing the cache does not cause data from your disks to be lost, nor do you need to flush the cache to keep your disks up to date. /F is useful when you disable or enable the cache. Because it only works when the cache is running, you get an error message if the cache is not yet loaded and you don't inadvertently load with the /D or /E parameters.

/M Display disk cache measurements: the number of disk transfer requests, the number of physical transfers, the number of disk transfers saved, and the percentage of transfers saved.

/P Display all parameters in effect.

Note: If you wish to try different parameters, you must unload the program and reload it with the new parameters. DOS requires that resident programs be unloaded last in, first out.

/U Unload Super PC-Kwik.

/? Display a summary of these parameters.

Examples

Example 1: SUPERPCK /P

Meaning: Display the parameters currently in effect.

Example 2: SUPERPCK /M /U

Meaning: Display program measurements and then unload the program.

For More Information

Appendix A contains descriptions of parameters for advanced use of Super PC-Kwik. See also the DISKREAD.ME file for information which was available too late to include in the manual and for specific hardware and software restrictions.

Section 4

PC-KWIK RAM DISK

Introduction

The PC-Kwik RAM Disk is a simple and efficient RAM-resident disk which shares memory dynamically with the Super PC-Kwik Disk Accelerator program.

This section discusses the benefits of RAM disks in general, and gives a summary of the PC-Kwik RAM Disk's particular features. It describes how to use the RAM Disk and discusses the parameters you can set to customize the RAM Disk for your system.

How RAM Disks Work

A RAM disk uses available memory to simulate a physical disk drive. It is usually small compared to physical disk drives, although PC-Kwik's RAM Disk can hold up to 16M bytes of information. You can create, read, and write files at the high speeds of RAM, many times faster than any physical disk.

Because a RAM disk is set up to function just like a physical disk drive, it can be used much the same way as any disk, with one important exception: *All the information stored on a RAM disk is saved only as long as the system is powered on.* Should the system unexpectedly hang up or lose power, or if information fails to get copied onto a physical disk before restarting, *the information is lost.* Likewise, if you unload the Disk Accelerator, the RAM Disk's data is lost.

A RAM Disk vs. a Cache

A RAM disk stores only the files copied to it, only so long as it has room in its memory. If a file gets so big it no longer fits in the RAM Disk, you get an "Insufficient disk space" error. The data in a RAM disk is the real data, not a copy, until you make a copy of that data to a hard disk.

A disk cache uses memory to keep a constant copy of all the disk data recently accessed, regardless of which file or disk it comes from. When you need to read that data, a cache can supply it, without reading the disk. A cache constantly updates itself and usually does not save specific files. The data in a cache buffer is only a copy of the real data that is already on the disks.

A RAM disk can guarantee that particular files copied onto it are always available from RAM memory. It is useful for programs which are needed often, such as database management systems or spreadsheets. It makes loading these files much faster than loading from a physical disk.

A RAM disk can be useful for programs that require a temporary or scratch file during processing. As long as you know ahead of time the maximum size of that file, it can be put in a RAM disk, and can save unnecessary writes to a physical disk.

A cache can speed up access to *all* program and data files, not just a few files, no matter where they may be located on the disks. The cache won't lose data in the case of a power loss, because the data is always written directly to the physical disk.

Data files never outgrow a cache. While it may not be able to store all of the data at once, a cache continues to speed up access to all the data it is currently storing. Files on a RAM disk can sometimes get too big for the available memory.

Features

Automatic Memory Location

You do not need to tell the PC-Kwik RAM Disk which type of memory to use. Because it shares Super PC-Kwik's memory, the RAM Disk data area is automatically located in conventional, expanded, or extended memory, depending upon which type of memory the cache buffer is in.

Dynamic Memory Usage

You can create a large RAM Disk, because the memory for the RAM Disk is shared with the Super PC-Kwik disk cache. The RAM Disk only uses memory from the cache buffer when you copy files. Whenever you delete a file from the RAM Disk, the memory that was used to store the file is returned to the cache for its use. Because the RAM Disk already resides in memory, Super PC-Kwik doesn't need to cache the files on the RAM Disk. Note that the cache does not share or lend any of the cache buffer set aside for the RAM Disk, in case it is needed. If you need more memory for your Print Spooler or another application, you should decrease the size of the RAM disk so more of the cache buffer can be shared or loaned out.

Warning: If you delete files from the Power Pak RAM Disk, you cannot recover them with "unerase" utilities, since the memory locations revert to being used by Super PC-Kwik. Be careful to back up your RAM Disk files to hard disk before deleting them.

Using the RAM Disk

To use the RAM Disk, the Super PC-Kwik Disk Accelerator must first be loaded. Super PC-Kwik automatically initializes the RAM Disk. The RAM Disk dynamically shares memory with Super PC-Kwik, taking memory only as it is needed for files. The memory used by files copied to the RAM Disk becomes unavailable for other uses of the cache.

Setting Up

To set up the RAM Disk, you must put a copy of the device file PCKRAMD.SYS in the root directory of the system boot disk, or into the subdirectory containing the PC-Kwik files (usually \PCKWIK). The INSTALL utility described in Section 2 copies this file to the correct subdirectory during installation and sets up and modifies your CONFIG.SYS file so the RAM Disk and Super PC-Kwik start when your system boots.

If you didn't use the INSTALL routine or you want to manually copy the program, put the Multisoft Power Pak diskette in drive A and copy the file to the \PCKWIK directory on drive C by typing:

```
COPY  A:PCKRAMD.SYS  C:\PCKWIK
```

Then place the following command in the \CONFIG.SYS file of your system boot disk:

```
DEVICE=C:\PCKWIK\PCKRAMD.SYS
```

This command sets up the RAM Disk with the default values for the two parameters. If you are not sure how to create or modify the CONFIG.SYS file, refer to Appendix F.

Note: Generally the best place for the RAM Disk command is at the end of the CONFIG.SYS file. Place the command for the RAM Disk *after* any drivers that partition hard drives. Then the logical drive letter for the RAM Disk is a new letter rather than a drive letter that has previously been in use for hard drive partitions. If you are replacing an existing RAM disk, edit the CONFIG.SYS file, remove the old RAM disk command, and replace it with the PC-Kwik RAM Disk command shown above.

Setting Up Two RAM Disks

You can set up two RAM Disks as easily as you can set up one. To set up a second PC-Kwik RAM Disk, simply place a second command line in your CONFIG.SYS file:

```
DEVICE=C:\PCKWIK\PCKRAMD.SYS
```

When you next restart your computer, you see the sign-on message for the PC-Kwik RAM Disk, and a message telling you the maximum disk size and directory size. The directory size always is rounded up to a multiple of 16. If the system contains DOS version 3.1, or later, the RAM Disk can also identify the disk letter it uses.

Signing On

The PC-Kwik RAM Disk sign-on message looks like this:

```
PC-Kwik(R) RAM Disk, Version xxxx installed.
Copyright 1987-1991  Multisoft Corporation, All Rights Reserved.
   128 K bytes maximum disk size.
    64 maximum directory entries.
Drive D reserved for RAM Disk.
```

When Super PC-Kwik starts, it automatically detects that the RAM Disk driver has been loaded. Super PC-Kwik formats the RAM Disk and gets it ready for you to use.

Super PC-Kwik tells you the drive letter of the RAM Disk in its sign-on message. This logical name is the same each time, unless a new device which requires a drive letter assignment is loaded *before* the PC-Kwik RAM Disk command in your CONFIG.SYS file.

As with other RAM disks, the actual formatted data area available on the disk is slightly smaller than the total disk size requested. At any time, the amount of space available to the RAM Disk can be determined with the DOS DIR or CHKDSK commands just as it is with physical disks.

How to Use the RAM Disk

To use the RAM Disk, just copy frequently used files to the PC-Kwik RAM Disk device after loading Super PC-Kwik.

Should you attempt to use the PC-Kwik RAM Disk without loading Super PC-Kwik, you receive the following error from DOS:

```
You must install PC-Kwik cache before using PC-Kwik RAM Disk

Not ready error reading drive d
Abort, Retry, Ignore?
```

If you get this message you should Abort, start Super PC-Kwik, and try using the RAM Disk again.

Example

If the drive letter of the PC-Kwik RAM Disk is D and you have a word processor program named EDITOR.EXE in a subdirectory named \EDITS on drive C, copy the program to the RAM Disk:

```
COPY  C:\EDITS\EDITOR.EXE  D:
```

Then the program may be loaded quickly from the RAM Disk by typing the command:

```
D:EDITOR
```

You can also place the device letter of the RAM Disk in the command search path using the DOS PATH command. For this method to be effective, there should be no copies of the same program in any of the directories which appear before the RAM Disk in your command search path. For instance, a PATH command that looks like this could be used:

```
PATH  C:\;C:\DOS;D:\;C:\BIN;C:\EDITS
```

Then when you type:

```
EDITOR
```

from your DOS prompt, the program loads from the RAM Disk D rather than from the hard disk C. See your DOS Reference Manual for more information on using the PATH command.

Some utility programs, such as compilers, can be made to use the RAM Disk for storing the temporary files they create while they run. Consult the documentation for your applications programs.

Impact of the RAM Disk Size on the PC-Kwik Spooler

The PC-Kwik RAM Disk does not use the space reserved for it until that space is needed. The Super PC-Kwik disk cache uses that memory space for its cache buffers until the RAM Disk has files to put in it.

Normally, the Disk Accelerator shares the memory it is using for its cache buffers with the Print Spooler. But the space reserved for the RAM Disk is not available to be shared with the PC-Kwik Spooler, because the space must be available to DOS when and if it is needed for a file on the RAM disk.

If you discover that the maximum space available to the Spooler is insufficient, you may want to reduce the size of the RAM disk by adjusting the value of the /S:*nnnnn* parameter in your CONFIG.SYS file.

Unloading the RAM Disk

The PC-Kwik RAM Disk is removed automatically from the system when Super PC-Kwik is unloaded or when the system is shut off or rebooted.

Warning: All files on the RAM Disk are lost. To save files that are on the RAM Disk, copy them to a physical disk before unloading.

Parameter Options

The PC-Kwik RAM Disk driver uses two parameters to determine how to set up the RAM Disk. Each parameter has a default value, the value that is used if it is not instructed otherwise.

/S:*nnnnn* Maximum size of the RAM Disk in Kbytes. The maximum value is 16,384 and the minimum is 4.

Because RAM Disk space is not actually allocated until files are copied to the RAM Disk, it is usually best to overestimate the value of *nnnnn*. Keep in mind, however, that space reserved for the RAM Disk is not available to the Print Spooler or for lending to other application programs, so *nnnnn* should be set to a number less than the total cache size.
Default: /S:128

/D:*nnnn* Maximum number of root directory entries. The maximum value is 2,048 and the minimum is 16.
Default: /D:64

Examples

Example 1: DEVICE=C:\PCKWIK\PCKRAMD.SYS /S:90 /D:32
Meaning: Set up a RAM Disk with a maximum size of 90K bytes and a maximum of 32 directory entries.

Example 2: DEVICE=C:\PCKWIK\PCKRAMD.SYS /S:270
Meaning: Set up a RAM Disk with a maximum size of 270K bytes and a maximum of 64 directory entries.

Common Questions

Q. *When I do a CHKDSK on my RAM Disk it shows "bad sectors". Why?*

Q. *I set up my RAM Disk for 300K bytes. But, when I try to copy less than 300K bytes worth of files to it I get "Insufficient disk space" errors. What happened?*

A. The answer to both of these questions is that the maximum size specified for the RAM disk is larger than the memory available to Super PC-Kwik.

Because the RAM disk size is set up at system initialization time, before Super PC-Kwik has been loaded, the maximum disk size specified for the RAM Disk, may be larger than the memory available from the cache. In this case, Super PC-Kwik formats the RAM disk to the maximum available size, and marks any extra, unavailable area as "bad sectors". This is how DOS knows that the portion of the RAM Disk beyond the cache size is unusable. To correct this, note the cache size displayed in the Super PC-Kwik sign-on screen, then change the size parameter for the RAM Disk device in CONFIG.SYS and reboot.

Section 5

PC-KWIK KEYBOARD ACCELERATOR

Introduction

In normal DOS systems, all keys repeat at a rate of about 9 characters per second and there is a half-second delay between the first character and the second (repeated) character. Because there are 80 characters on a screen line, it takes almost 9 seconds to move the cursor from one side of the screen to the other.

The PC-Kwik Keyboard Accelerator is a small, memory-resident program that speeds the rate at which characters are repeated when a key is held down on a keyboard. It also reduces the delay between when the first character is typed and when subsequent characters start repeating (the "response time"). This produces a much faster response to the cursor keys. When the Keyboard Accelerator is loaded without giving it explicit parameter values, the horizontal cursor moves across the screen in less than two seconds.

If you are accustomed to waiting for your cursor, you may be pleasantly surprised at how quickly you are able to move around within documents. In fact, once you have used the Keyboard Accelerator you might find it very slow to use a system without it.

The Keyboard Accelerator speeds up keys on IBM PC, XT, AT, 386, and PS/2 computers and compatibles. It supports extended 101-key keyboards, standard 84-key keyboards and foreign keyboards.

Features

Key Repeat Speed

You have complete control over the speed at which characters repeat and over the response time before repeating. These can be modified at any time with keyboard hot-key commands. The repeat rate can be increased to over 100 characters per second, or slowed down to the normal DOS speed of 9 characters per second.

Key Repeat Acceleration

At higher speeds it would be almost impossible to repeat just three or four keys at a time, so the Keyboard Accelerator actually *accelerates slowly*, building up to its top speed after nine or ten characters have been repeated so you can move around a few characters at a time and then take off at high speed to move longer distances. Or you can choose instantaneous acceleration.

Horizontal vs. Vertical Speed

People who do a lot of document editing appreciate fast cursors. Because the screen is generally 80 characters wide, and only 25 lines high, the Keyboard Accelerator automatically accelerates the horizontal cursor keys twice as fast as the vertical keys. We have found this to be a comfortable ratio for editing. If you find the cursor keys too fast in spreadsheets, you can turn off the cursor key acceleration if you prefer.

Eliminates Character Run-on

One of the problems of repeating characters is that the characters sometimes keep appearing after you lift your finger off a key. This occurs when a program cannot process the characters as fast as they are being repeated. The extra characters build up in the keyboard type-ahead buffer, and are still there after you let up on the key. The Keyboard Accelerator can detect this situation and automatically slows itself down. In addition, it goes back and clears any extra characters out of the buffer when you let up on the key, thus preventing character run-on.

Fast Response on Selective Keys

The Keyboard Accelerator also allows you to select the keys to speed up, and which keys are to have a faster response. For instance, you can set the cursor keys to respond immediately without having all the keys repeat immediately.

The fast repeat feature can be turned on or off for specific keys. For example, you may choose to only speed up the underline, backspace, delete, and period keys, in addition to the cursor keys. See Appendix B, *Advanced Use of the Keyboard Accelerator*, for more details on how to configure specific keys for fast response.

The ReDOS Command Editor

The Keyboard Accelerator also contains the PC-Kwik ReDOS Command Editor. ReDOS automatically saves each command you type at the DOS prompt to a special command list, and decreases the amount of time you spend typing in commands.

When you press the up or down arrow keys from the DOS prompt, ReDOS displays the saved commands in a pop-up window. By highlighting any of the commands displayed, you can re-enter the

command at the DOS prompt. These commands may be commands you entered at the prompt, those you entered directly into the command list, or those you placed into a special startup file which loads into the command list at any time. Using a variety of editing keys, you can modify and then re-enter the commands.

If you want to repeat a command you already used, you can type in a few letters and press the <Tab> key; ReDOS finds the command in the command list and completes it at the DOS prompt. Or you can search through the command list for a specific command or part of a command. See *Using the ReDOS Command Editor* later in this chapter for more details.

The ReDOS command editor is automatically loaded and configured as part of the Keyboard Accelerator. You can choose the maximum size of the command list. ReDOS shares memory for this list with the Super PC-Kwik Disk Accelerator.

Saves Conventional Memory

The Keyboard Accelerator is designed to automatically save as much conventional memory as possible. It does this by sharing the memory allocated to the cache and by moving some or all of its program code out of conventional memory. How much code it can move and where it moves it to depends on your system's configuration. The program checks your system and detects what memory and software is available. It automatically configures itself to save as much conventional memory as is possible on your particular machine. You need not set any parameters or do anything special. For more details about how this feature works and what system configurations are necessary, see Appendix J *Using Upper Memory Blocks and Expanded Memory for Program Code.*

Using the Keyboard Accelerator

To install the PC-Kwik Keyboard Accelerator, see Section 2. To run the Keyboard Accelerator from the DOS prompt, type:

PCKKEY

The screen looks like this:

```
PC-Kwik(R) Keyboard Accelerator, Version xxxx
Copyright 1986-1991  Multisoft Corporation, All Rights Reserved.

The Keyboard Accelerator is loaded and enabled.
Following is a list of the parameters in effect:

/&U          The Keyboard Accelerator is loaded in upper memory.
/A+          Enable audio sounds for keyboard commands.
/C-          Don't copy repeated commands to bottom of ReDOS command list.
/I-          Accelerate gradually instead of instantaneously.
/K+          Enable keyboard hot-key commands.
/L:2         Save commands 2 characters long or longer.
/M1          Start ReDOS in overwrite Mode with small cursor.
/R3A         Repeat rate = 27 characters per second on All keys.
/T4C         Response time = 220 milliseconds on Cursor keys only.
/V+          The ReDOS attribute set is:  Default.
/W:13,40     The ReDOS window is 13 rows by 40 columns.
/X:0,38      ReDOS popup window position: Top row 0, left column 38.
/Z:2         ReDOS may share up to 2K bytes of cache memory.

Type PCKKEY /? for help.
```

Adjusting the Keyboard Speed

It may take a little practice to get used to the new speed of the cursors. You might wish to slow down the Keyboard Accelerator when you first try it, and then gradually speed it up as you become accustomed to your faster keyboard. The default speeds have been set so that people usually become accustomed to them fairly quickly.

Once the Keyboard Accelerator is running, you can increase or decrease the *repeat rate* (the number of characters per second generated when a key is held down) by pressing:

<Alt> +	to increase the repeat rate (more characters each second)
<Alt> -	to decrease the repeat rate (fewer characters each second)

These keys change the repeat speed and produce a short sound. The pitch reflects the current speed setting. There is no sound if /A- was selected at loading.

You may increase or decrease the *response time* (the length of time between when a key is first pressed and when it starts repeating) by pressing:

<Alt> <Ctrl> +	for a faster response
<Alt> <Ctrl> -	for a slower response

Choosing a faster response is accompanied by a higher pitched sound and choosing a slower response is accompanied by a lower pitched sound. There is no sound if /A- was selected at loading.

Modifying the Default Speed Settings

If you find a speed which is more comfortable for you than the default values, you may customize the Keyboard Accelerator to always load using the settings you prefer. The /R and /T parameters control the repeat rate and response time, respectively. Use these parameters with different values in the PCKKEY command line in your AUTOEXEC.BAT or POWERON.BAT files. Then, when the Keyboard Accelerator starts, it uses these values. See the *Parameters* section, below, for more information.

Spreadsheet Mode

In normal operation, the left and right arrow keys are accelerated twice as fast as you requested for the other keys. For spreadsheets or other programs which use the arrows to move the cursor several spaces at a time, you may want to use Spreadsheet mode, where the horizontal keys are repeated at the same rate as the other keys.

Enter and exit Spreadsheet mode by pressing <Alt><Ctrl>1. A high-pitched sound indicates Spreadsheet mode, and a low-pitched sound indicates normal cursor mode. There is no sound if /A- was selected at loading.

You may also use the parameters /1+ and /1- to enter and exit Spreadsheet mode from a batch file.

Disabling the Keyboard Accelerator

You can disable and re-enable the Keyboard Accelerator at any time by pressing <Alt><Ctrl>2. This combination turns off the Keyboard Accelerator without removing it from memory. It can be reactivated with another <Alt><Ctrl>2. In the meantime, all other key combinations are ignored and the response time and repeat rate go back to what they were before you loaded the program. A "slow down" or "speed up" sound accompanies <Alt><Ctrl>2 unless /A- was selected at loading.

You can also disable the Keyboard Accelerator from the DOS command line or a batch file by entering:

```
PCKKEY /D
```

Re-enable it using:

```
PCKKEY /E
```

Disabling the Hot-Key Commands

You may occasionally need to use some of the hot-key combinations for another program. You can disable and re-enable the Keyboard Accelerator's hot-key commands at any time by pressing <Alt><Ctrl>3. This combination disables all other hot-key keyboard commands. All commands except the next <Alt><Ctrl>3 are ignored and passed on to any other program waiting for keyboard input. This does not change the speed-up functions of the Keyboard Accelerator.

The next <Alt><Ctrl>3 re-enables the hot-key keyboard commands. High- and low-pitched sounds accompany this key combination unless /A- was selected at loading.

Note: If you used /K- at loading, even <Alt><Ctrl>3 is disabled, and no hot-key keyboard commands can be used.

Disabling the Audio

Most of the Keyboard Accelerator's hot-key commands are accompanied by a sound to give a positive indication that they have been recognized. If you wish to turn off all sounds, you may do so by loading with the /A- (no audio) parameter:

```
PCKKEY /A-
```

The Help Screens

If you forget which keys to use, you can request a display of all the hot-key commands by typing:

```
PCKKEY /H
```

If you forget the command line parameters, you can request a display of all parameter options by typing:

```
PCKKEY /?
```

If the Keyboard Accelerator is not loaded, the help information displays loading parameters. If the Keyboard Accelerator is loaded, the help information covers parameters to use while the program is running.

Unloading

You may unload the Keyboard Accelerator and remove it from memory entirely by specifying:

```
PCKKEY /U
```

If other programs have been loaded after the Keyboard Accelerator and these programs have not yet been unloaded, you receive the following message:

```
/U Cannot unload -- Other programs above.
```

You must unload any programs residing above the Keyboard Accelerator in memory before you can unload the program.

Using the ReDOS Command Editor

The PC-Kwik ReDOS Command Editor is automatically loaded and configured as a part of the Keyboard Accelerator. As you type commands at the DOS prompt, ReDOS saves them in a special command list. You can retrieve these commands from the command list for re-entry at the DOS prompt, edit them before re-entry in the ReDOS window, or edit them at the DOS prompt before they execute. You can also enter commands directly into

the command list and load commands into the command list from a startup file each time you start ReDOS.

When you load ReDOS, it overrides any previous command line editor you may have been using. If you turn off ReDOS or disable or unload the Keyboard Accelerator, the previous command line editor becomes active again. Similarly, a command line editor loaded after ReDOS is the active command line editor. To save memory and eliminate possible conflicts, use only one command line editor at a time.

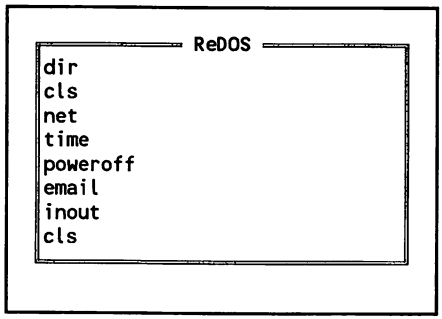


Figure 6: ReDOS Window

After you have loaded ReDOS, pressing the up <↑> or down <↓> cursor keys displays a pop-up window that shows as many commands from the command list as will fit in the window. The last command you entered is highlighted. Use the cursor keys to move the highlighting to other commands in the list. If you press <Enter>, the highlighted command is passed to DOS for execution. Pressing <Alt>S brings up a search prompt so you can search for commands containing a particular string of characters. See *Searching the Command List* for a description of the search feature.

At the DOS prompt, typing a few letters and the <Tab> key causes ReDOS to search for a matching command in the list and pass that command to DOS. See below for more details on how this works.

ReDOS Functions

The ReDOS functions are available both at the DOS prompt and within the ReDOS pop-up window. Some functions work in both environments and some only in the window.

When you type a command at the DOS prompt, it is stored in the ReDOS command list; this command list displays in the pop-up window. ReDOS displays all control characters, except those defined as function keys, as ^x. For example, <Ctrl>D is displayed as ^D. The only exception is <Ctrl>P, which is not captured by ReDOS but routes your input to your printer, working as documented in DOS.

You can choose to edit the current command at the DOS prompt with the keys listed below under *In Both Environments*, or you can pop up the window and edit or re-use the commands in the command list, using the keys listed under *In Both Environments* and under *Manipulating the Window*.

In either environment, you can use any alphabetic, numeric, or punctuation key as text on the command line. Depending on whether you select insert mode or replace mode, you insert text to the right of the cursor or overwrite existing text at the cursor. You change from one mode to the other by pressing the <Insert> key. When the command line cannot accept any more characters, the system beeps and ignores the character.

If you wish to clear the command list completely and start over, you can use <Ctrl>F to flush the command list.

Searching the Command List

ReDOS has a built-in search facility you can use to search for previously used commands and complete them on the command line. If you type a partial command at the DOS prompt, <Tab> searches the ReDOS list for the first command that matches. If the first command presented is not the one you wanted, use the <Tab> key to cycle through the list for matches. If you wish to narrow the search more closely, you can type a few more characters before pressing <Tab> again. <Enter> selects the command currently on the command line.

If you are in the ReDOS window and want to search for a previous command, use <Alt>S to bring up a search string prompt. Type a few characters of the command you wish to match and ReDOS searches for the first match in the command list, moving the highlight bar instantly to the match. If the first match is not the one you want, <Tab> moves the highlight bar to the next match. <Esc> moves the cursor into the highlight bar so you can edit the selected command. <Enter> passes the selected command to DOS.

In Both Environments

<→>	Moves the cursor to the character immediately to the right of the current character.
<←>	Moves the cursor to the character immediately to the left of the current character.
<Ctrl><→>	Moves the cursor to the first character of the word following the current word.
<Ctrl><←>	Moves the cursor to the first character of the current word or (if the cursor was already on

	the first character of the current word) the first character of the preceding word.
<End>	Moves the cursor to the end of the command line. Pressing the <End> key twice makes the bottom command in the window the current command. Pressing this key three times makes the last command in the list the current command.
<Home>	Moves the cursor to the beginning of the command line. Pressing the <Home> key twice makes the top command in the window the current command. Pressing this key three times makes the first command in the list the current command.
<Ctrl>H or <Backspace>	Deletes the character to the left of the cursor location. Regardless of the mode you're in, this pulls the remaining text to the left, leaving the cursor at the character it started on.
<Del>	Deletes the character at the cursor position. Regardless of the edit mode you're in, this pulls the remaining text to the left, leaving the cursor to the right of the current character.
<Ctrl>W	Deletes all the characters from the cursor location to the beginning of the next word.
<Ctrl><Backspace>	Deletes the characters from the cursor location up to the beginning of the current word. If the cursor is at the first character of a word, the editor deletes the previous word.

	The character at the cursor location is not deleted.
<Esc> or <Ctrl>[	Erases the current command line. If the command was in the list, it remains there. You can retrieve it using Undo (<Ctrl>U). If the ReDOS window is open, it is closed when you press <Esc>.
<Ctrl><End>	Deletes all characters from the cursor to the end of the line.
<Ctrl><Home>	Deletes all characters from the beginning of the line up to, but not including, the character at the cursor. The editor moves the line to the left, placing the character at the cursor immediately to the right of the window or prompt.
<Ctrl>U	Undoes editing changes, restoring the command line to its prior state.
<F3>	This function partially emulates the DOS <F3> editing function. By pressing <F3> you insert the characters from the command line, before any changes were made, into the current command line at the cursor. These characters overwrite any characters in the current line and the command line is truncated to the length of the original line. The <F3> key has no effect when you are editing a new command if the command contains graphic characters.
<Enter> or	If the ReDOS window is open, it is closed; the current command line displays at the

<Ctrl>M	DOS prompt and is passed to DOS for execution. If the ReDOS window is not open, the current command line, with any changes you've made, is passed to DOS for execution.
<Ctrl>C or <Ctrl><Break>	Aborts editing. The <Ctrl>C is included with the command. If the ReDOS window was popped up, it is closed before control returns to DOS.
<Tab>	Searches for the previous occurrence in the command list of the character or characters you have typed.
<Insert>	Toggles from Insert to Overwrite mode and back again.

Manipulating the Window

To access the ReDOS pop-up window, press the up arrow or the down arrow key. If you use the up arrow, the window opens with the last command you entered or pointed to highlighted. If you use the down arrow, the window opens with the next command in the list highlighted. If you have not entered a command since ReDOS was loaded, the highlighted command line is blank. If you use the /F parameter when you load ReDOS, the commands in the special startup file show in the window the first time you open it. (Appendix B explains how to set up and use this startup file.)

The window height depends on the number of commands entered (for example, if you entered two commands, the window is high enough for only two commands). The window keeps growing until it reaches the maximum height you set with the /W parameter.

The default maximum is 13 command lines. The command list may hold many more commands than you display in the window. The number of commands it can hold depends on the amount of memory you specified be set aside for the command list with the /Z parameter. The default command list is 2K bytes long, which is about 100 medium-sized commands.

If there are more commands in the command list than the window displays, arrows on the left border show where the additional commands are. For example, an up arrow shows that the additional commands are above the top command. Conversely, a down arrow shows that the additional commands are available below the bottom command.

If you have a small cache buffer, you may wish to disable the pop-up window using the /X- parameter. This reduces the amount of memory ReDOS shares with the cache. ReDOS works whether you enable the window or not. You can still access the command list and edit commands at the DOS prompt; you just can't see your previous commands listed on your screen. All the ReDOS commands and keystrokes listed in *In Both Environments* are available for you to use.

When you are in the ReDOS window, these key combinations manipulate the cursor position.

<PgUp>	Displays the previous page of commands. The highlight bar moves to the top of the window if the first page of commands is being displayed.
<PgDn>	Displays the next page of commands. The highlight bar moves to the bottom of the

	window if the last page of commands is being displayed.
<Home><Home>	Makes the top command in the window the current command and highlights it.
<End><End>	Makes the bottom command in the window the current command and highlights it.
<Ctrl><PgUp> or <Home><Home><Home>	Makes the first command in the list the current command and highlights it.
<Ctrl><PgDn> or <End><End><End>	Makes the last command in the list the current command and highlights it.
<Alt>S	Brings up a search string prompt at the bottom of the pop-up window.

Parameter Options

A number of options may be set by adding parameters to the PCKKEY command line. The parameters can follow the command in any order, but each parameter must be preceded by a forward slash (/). The section lists the basic parameters for the Keyboard Accelerator. Advanced parameters, hot keys and special keys are listed in Appendix B.

In the following, * means "multiplied by"; the number *n* must be a whole number; the term "all keys" includes the alphanumeric keys and punctuation but excludes the <Pause>, <ScrollLock>, <NumLock>, and <PrintScrn> keys.

While Loading the Keyboard Accelerator

You can use these parameters while loading the Keyboard Accelerator, either directly from the DOS command line or from a batch file (to load the Keyboard Accelerator using the same option settings each time).

/1+ Load in Spreadsheet mode. Default: /1- (normal mode)

/A+ Audio for hot-key actions. Default: /A+ (audio active)

/H Display a summary of keyboard hot-key commands. If you use this parameter with other parameters while loading the Keyboard Accelerator, the summary of hot-key commands displays but the program does not load. Default: None

/I+ Instantaneous repeat rate after response time. No gradual increase in reaching full repeat rate. Default: /I- (accelerate gradually when starting to repeat)

/K+ Accept hot-key commands. /K- can be used to avoid conflict with programs using the same keys. Default: /K+ (accept hot-keys)

/P+ Display the speed settings at loading time. /P- suppresses the parameter display. Default: /P+ (display parameters)

/R*n*A Set the repeat rate to *n**9 characters per second for all keys. The minimum is 1 and the maximum is 14. Default: /R3A (27 cps for all keys)

/R*n*C Set the repeat rate to *n**9 characters per second for cursor keys only. The minimum is 1 and the maximum is 14.
Default: /R3A (27 cps for all keys)

/R*n*S Set the repeat rate to *n**9 characters per second for special keys and cursor keys only. The minimum is 1 and the maximum is 14.
Default: /R3A (27 cps for all keys)

/T*n*A Set the response time to *n**55 milliseconds for all keys. The minimum is 1 and the maximum is 12.
Default: /T4C (response time of 220 milliseconds for cursor keys only)

/T*n*C Set the response time to *n**55 milliseconds for cursor keys only. The minimum is 1 and the maximum is 12.
Default: /T4C (response time of 220 milliseconds for cursor keys only)

/T*n*S Set the key response time to *n**55 milliseconds for special keys and cursor keys only. The minimum is 1 and the maximum is 12.
Default: /T4C (response time of 220 milliseconds for cursor keys only)

Notes:

1. You may use the A, S, and C options for /R and /T without specifying a number; /RA is the same as /R3A. However, if a number is specified, it must come immediately after the /R or /T. If /RA6 is entered, the 6 is ignored.

2. Only keys which are being repeated faster can have a faster response time. For example:

   PCKKEY /R4C /T3A

   produces the same effect as:

   PCKKEY /R4C /T3C

/? Display a summary of these parameters. If you use this parameter while loading the Keyboard Accelerator, the parameter summary displays but the program does not load.

While Loading or Running ReDOS

You can configure the PC-Kwik ReDOS Command Editor to your particular needs. The options described in this section can be set up when you load the Keyboard Accelerator and are also available, unless noted, whenever ReDOS is enabled. The advanced parameters are described in Appendix B.

/C+ Copy reused commands to the bottom of the command list. /C- does not copy commands you reuse to the bottom of the list.
Default: /C- (do not copy reused commands)

/L:*nn* Specify the minimum command line length to be saved in the command list. The line length may be any number from 1 to 99. Only commands that are *nn* or more characters long are saved to the command list. Use this option to keep your command editing window from being cluttered with short commands that may be easier to retype than to select from the editing window.

Default: /L:2 (show commands of 2 or more characters)

/L- Save all commands, no matter what length.

/M+ Load ReDOS. If you do not want to use ReDOS at all, specify /M- at loading. *Note:* When you use /M-, no other ReDOS options are available. Default: /M+ (ReDOS loaded)

/M:*n* ReDOS mode option, to enable, disable, and set up the cursor size and the editing mode. Note that the cursor you choose for the ReDOS window is the same cursor which appears on the DOS command line.

n is one of:

0 Disable ReDOS and pass command editing control to the previous editing function. To re-enable ReDOS, use any of the other modes. *Note:* When you use this option, the /L, /V, /X and /Z options are not available.

1 Initial mode is overwrite and the initial cursor is the normal DOS cursor.

2 Initial mode is overwrite and the initial cursor is a fat cursor.

3 Initial mode is insert and the initial cursor is a normal DOS cursor.

4 Initial mode is insert and the initial cursor is a fat cursor.

Default: /M:1 (overwrite mode with normal cursor)

/W:*rrr,ccc* Sets the number of command lines (in vertical rows) and the length of each command line (in characters) in the command editing window. The minimum is 5 command lines of 2 characters each. The absolute maximum for either is 253 and the actual maximum is the size of your monitor in rows and columns. The count does not include the border.
Default: /W:13,40 (13 rows of 40 characters each)

/X:*rr,cc* Sets the top left corner of the fully expanded command editing window at row *rr* and column *cc*.

The command editing window adapts to your screen size, even if you change the size while the Keyboard Accelerator is loaded. The window is always placed so that all of it is visible, regardless of the coordinates given. For example, entering:

```
PCKKEY /X:50,89
```

forces the command window to the lower right corner of your screen, whether your screen is set to 80 columns by 25 lines, or 132 columns by 66 lines.

Default: /X:0,255 (upper right corner)

/X+ Enables ReDOS's pop-up window. /X- disables the pop-up window; the up and down arrow keys still scroll among the commands in the command list, but the window does not pop up.
Default: /X+ (use a pop-up window)

While Running the Keyboard Accelerator

The following parameters for the Keyboard Accelerator may be used any time the Keyboard Accelerator is running, and can be used either from the DOS prompt or in a batch file.

/1+ Change into Spreadsheet mode.
/1- Change out of Spreadsheet mode.

/D Disable the program but remain in memory.

/E Re-enable the Keyboard Accelerator after disabling.

/H Display a summary of the keyboard hot-key commands.

/P Display the current parameters.

/U Unload the Keyboard Accelerator from memory.

/? Display a summary of these parameters.

See Appendix B for advanced information on using ReDOS and the Keyboard Accelerator.

Section 6

PC-KWIK SCREEN ACCELERATOR

Introduction

The PC-Kwik Screen Accelerator is a resident program which speeds up the output of text to the video screen. You load the program when you begin using your computer. The Screen Accelerator automatically determines the type of display present and uses techniques appropriate to your display.

The Effects of Screen Acceleration

The effects of the PC-Kwik Screen Accelerator are most noticeable when running programs which output normal text to the screen one line at a time, such as the DOS DIR and TYPE commands.

Programs which display and modify entire screens at once, without scrolling up, also benefit considerably as long as they use the standard DOS and BIOS functions.

Not all programs can display their screens faster. Some applications do all of their video displays by writing directly to a screen, without using the normal DOS or BIOS system calls. The Screen Accelerator cannot work while such programs are running, and the ReView feature is not able to store screens to the video buffer. The Screen Accelerator also has little or no effect on output to the screen in graphics video modes.

How Fast?

The most dramatic improvements occur on systems with color monitors. With a CGA adapter, screen throughput should be two to four times faster. Systems with EGA or VGA adapters may see 3 to 6 times faster screen scrolling. On standard monochrome and Hercules monochrome systems, you may see improvements of 30% to 100%. Monochrome screens attached to EGA, VGA, or CGA-type video adapters may go as fast as color monitors.

Features

Screen Blanking

In addition to making the screen faster, the Screen Accelerator provides *screen blanking*. This feature blanks your screen if you have not typed anything or moved the mouse for a preset period of time. You can choose how long you want the Screen Accelerator to wait before blanking your screen. You can also use a hot key if you prefer, to blank your screen when you wish. Screen blanking prevents monitor burnout, which can happen when the same characters are displayed on your screen for long periods of time.

ReView Scroll Back

One of the Screen Accelerator's most useful features is screen ReView. With ReView you can scan back over directories, listings, or commands that have scrolled off the screen. When the Screen Accelerator is started, the ReView feature is enabled by default.

Saves Conventional Memory

The Screen Accelerator is designed to automatically save as much conventional memory as possible. It does this by sharing memory allocated to the disk cache for its video buffer and by moving some or all of its program code out of conventional memory. How much code it can move and where it moves it to depends on your system's configuration. The Screen Accelerator checks your system and detects what memory and software is available. It automatically configures itself to save as much conventional memory as is possible on your particular machine. You need not set any parameters or do anything special. For more details about how this feature works and what system configurations are necessary, see Appendix J, *Using Upper Memory Blocks and Expanded Memory for Program Code.*

Using the Screen Accelerator

To install the PC-Kwik Screen Accelerator see *Installing Power Pak* in Section 2. To load the Screen Accelerator, type:

```
PCKSCRN
```

Note that you must have the Super PC-Kwik Disk Accelerator running before you load the Screen Accelerator, since the programs share memory. When it loads, the Screen Accelerator displays its parameter settings:

```
PC-Kwik(R) Screen Accelerator, Version xxxx
Copyright 1986-1991  Multisoft Corporation, All Rights Reserved.

The Screen Accelerator is loaded and enabled.

Following is a list of the parameters in effect:

/&U         The Screen Accelerator is loaded in upper memory.
/A+         The Screen Accelerator is in Advanced mode.
/B+         Screen Blanking is enabled; idle time is 5 minutes.
/K+         Hot Key blanking is enabled; use <Alt><Shift><B> to blank.
/Q+         The Quick option is enabled.
/R+         The ReView feature is loaded; use <ScrollLock> to activate.
/S:         The ReView feature may share up to 16K of cache memory.
/W-         Will not restore screen on video Writes.
/X-         No ANSI device driver has been detected.

Type PCKSCRN /? for help.
```

See the list of parameter options at the end of this section for a description of what the parameters in the display do and how you can change them. Some of the parameters you are most likely to use are described in detail in the next section.

Screen Blanking

If your computer sits idle for long periods of time and you use a CRT monitor, patterns can burn into the screen's phosphor coating. You might see very light characters in places on the screen which should be blank. To avoid this problem, the Screen Accelerator provides a screen blanking feature which helps prevent a single pattern from remaining on the screen for an extended period of time. This feature blanks the display after a preset period of time or when a specific hot-key combination is used. The display is turned on again the next time a key is pressed or when something new is displayed on screen.

When the Screen Accelerator is started, screen blanking is enabled with a default idle period of five minutes. To change the idle period, use:

PCKSCRN /B:*nn*

where *nn* is the idle time in minutes, from 1 to 60. Specify /B- if you prefer no screen blanking.

Hot-key blanking is enabled by default when the Screen Accelerator is started. The default hot key is <Alt><Shift>B. You can specify a different hot key with the command:

PCKSCRN /KAC:*x*

or

PCKSCRN /KAS:*x*

where *x* is any letter, number or punctuation mark. /KAC:*x* sets the hot key to <Alt><Ctrl>*x* and /KAS:*x* sets it to <Alt><Shift>*x*. Pressing the hot-key combination blanks the screen instantly.

The screen is restored when you press any key. Note that if you press a character key, it is passed on to the application you are running or to DOS if you are at the DOS command prompt. To restore your screen without passing a character to the program, use the left-hand <Shift> key. The Screen Accelerator restores your screen without changing what you were doing when the screen blanked.

To tell the Screen Accelerator to restore the screen any time a program displays something new, use this command:

PCKSCRN /W+

This option can be useful when you wish to take advantage of screen blanking to run a program which takes a long time to display its results. When the program finally updates the screen, the display is turned on automatically. (However, if the program writes directly to the screen without using DOS or the BIOS, the display won't be updated, since the Screen Accelerator cannot detect the write.)

Modes of Operation

The Screen Accelerator has two modes of operation, Generic and Advanced. Most programs and computers can use Advanced mode, but you have the option of loading in either mode, or of switching from one mode to the other while the Screen Accelerator is running. The Screen Accelerator determines the default mode based on your hardware configuration.

Even though the Screen Accelerator may determine that your programs or configuration support only Generic mode, you can specify that particular programs are compatible with Advanced mode by using the /C:*name* parameter. See Appendix C for more detailed information about compatible files.

Generic mode increases the screen display speed by 30% to 100%. It is the default mode for standard monochrome and Hercules adapters. Even though your hardware supports Advanced mode, you can load in Generic mode by using the /A- parameter. You must also disable the ReView option and screen blanking (with /R- /B-). This saves some conventional memory at the expense of performance.

Advanced mode displays many DOS commands significantly faster than Generic mode but it uses somewhat more conventional

memory. Advanced mode is the default for CGA, EGA, and VGA color monitors.

If your system has a CGA, EGA, or VGA color video adapter you may switch between modes by using the /A- parameter from the DOS command line, unless you originally loaded in Generic mode. If you loaded in Generic mode, you can't switch because the program code for Advanced mode is not available.

Some applications programs may not be compatible with Advanced mode. Switching modes avoids display problems with those programs. Usually, the Screen Accelerator detects that the program is incompatible and switches modes automatically so you do not need to switch by hand. See Appendix C for more information about compatible program files.

Controlling Screen Speed

The Screen Accelerator can be slowed down if necessary. Using the /Q- parameter when loading slows down the screen display 20% to 50%. On CGA, EGA, and VGA systems, you can also slow down the display by loading in Generic mode with the /A- parameter.

It is seldom necessary to slow down the video. If directories or other data seem to go by too quickly, use the Screen Accelerator's ReView feature. ReView lets you scroll back and see information that passed by. With ReView enabled, simply press the <ScrollLock> key and then use the <↑> or <↓> keys to move backward and forward through the screens. Pressing the <ScrollLock> or <Ctrl><ScrollLock> keys again puts you back in normal operation. See *Using ReView* for more details.

If you don't want to use ReView, you have other options for slowing down the screen display to see what has gone by. When using the DIR command, add a /P to the end of the command to pause at the end of each screen full of data.

If you often use the TYPE command, use the DOS MORE command instead. It displays one screen at a time. You must remember to place a < ("less than" character) between MORE and the file name:

```
MORE < MYFILE.NOT
```

You can stop the display by pressing the <Pause> key or <Ctrl>S; continue the display by pressing any other key.

The Help Screen

If you forget the command line parameters, you can request a display of all parameter options by typing:

```
PCKSCRN /?
```

If the Screen Accelerator is not loaded, the help information displays parameters you can use while loading. If the Screen Accelerator is loaded, the help information covers parameters you can use while the program is running.

Using ReView

The ReView feature needs memory to store the video data. The Screen Accelerator shares this memory dynamically with Super PC-Kwik and Super PC-Kwik must be loaded for ReView to work. Each 80 x 25 screen requires about 4K bytes of buffer space. By default, the maximum size of the video buffer is 16K bytes. With its default, ReView can store four screens of information. The maximum ranges from 8K bytes to nearly the size of the

cache. The maximum size is set with the /S:*nnn* parameter; *nnn* is the number of K bytes of cache buffer to use for video storage. Once the Screen Accelerator is running, the maximum video buffer size can be changed from the keyboard. (See *Changing the Size of the ReView Buffer* below.)

As the ReView buffer collects data scrolling off your screen, it eventually reach its maximum size, and Super PC-Kwik can no longer use this memory for disk caching.

Starting ReView

To start ReView, press the <ScrollLock> key. An alternate hot key, <Alt><ScrollLock>, can be specified with the /R* parameter.

The bottom line of your display should look like this:

```
QUIT: Scrl Lock  MOVE: ↑ ↓ PgUp PgDn Home End /S:16  LINE:   79 of  103
```

The value after /S: shows the maximum video buffer size in K bytes. The LINE: values show which lines in the buffer are being displayed. In this example, line 79 is the top line on the screen and there are a total of 103 lines in the video buffer.

Moving Up and Down

Much like moving around in a word processor program, ReView lets you move around the screen buffer. The up < ↑ > and down < ↓ > arrow keys move one line at a time. By holding the key while it repeats, you can scroll up or down. The <PgUp> and <PgDn> keys move up and down one full screen at a time. The <Home> and <End> keys take you to the top and bottom of the video buffer.

Changing the Size of the ReView Buffer

To increase the maximum size of the video buffer to the limit allowed by Super PC-Kwik, press the right arrow key. The number after the /S: displayed at the bottom of your screen increases. To decrease the maximum size, press the left arrow key.

Quitting ReView

When you are finished reviewing the captured screen information, press <ScrollLock> or <Esc> to return to the screen as it was when you pressed <ScrollLock>.

To copy the portion of the screen buffer shown on the screen to the bottom of the screen buffer, so it shows when you quit ReView, press <Ctrl><ScrollLock> instead of <ScrollLock>.

Disabling ReView

The ReView feature can be disabled when starting the Screen Accelerator by using:

```
PCKSCRN /R-
```

Parameter Options

A number of options may be set by adding parameter values to the PCKSCRN command line. The parameters can follow the command in any order, but each parameter must begin with a forward slash (/).

When Loading

The following parameters can be used when the Screen Accelerator is loaded. Once the Screen Accelerator has been loaded, the parameters listed under *While Running* can be used.

/A+ Load in Advanced mode. /A- chooses Generic mode for color adapters.
Default: /A+ (Advanced mode) for color adapters, /A- (Generic mode) for monochrome adapters.

/B+ Enable screen blanking.
Default: /B+

/B:*nn* Enable screen blanking and set the idle period for the keyboard to *nn* minutes. *nn* is any number between 1 and 60.
Default: /B:5

/K+ Enable hot-key blanking. /K- disables hot-key blanking.
Default: /K+

/KAC:*x* Enable hot-key blanking; set the hot key to <Alt> <Ctrl>*x* where *x* can be any alphanumeric or punctuation key.
Default: /KAS:B

/KAS:*x* Enable hot-key blanking; set the hot key to <Alt> <Shift>*x* where *x* can be any alphanumeric or punctuation key.
Default: /KAS:B

/R+ Enable the ReView scroll back feature with the hot key <ScrollLock>. /R- disables ReView.
Default: /R+

/R* Enable the ReView scroll back feature with the hot key <Alt><ScrollLock>.
Default: R+

/S:*nnn* Allocate up to *nnn*K bytes of the cache memory for the ReView video buffer. The buffer size can be between 8K bytes and the maximum that can be shared with the cache.
Default: /S:16

/W+ Restore screen when a program writes to video. /W- keeps the screen blank even when a program sends data to the video monitor.
Default: /W-

/? Display a summary of these parameters. If you use this parameter with other loading parameters, the help summary displays but the program does not load.

While Running

The following parameters may be used after the Screen Accelerator has been loaded.

/A Switch modes. /A- switches to Generic mode and /A+ switches to Advanced mode (if the Advanced mode code was originally loaded). If you originally loaded in Generic mode and disabled ReView with /R-, you cannot switch to Advanced mode.

/B- Temporarily disable screen blanking. Re-enable blanking with /B+. If you originally loaded with the parameter combination /A- /B- /R-, you cannot enable screen blanking.

/B:*nn* Change the idle period for screen blanking to *nn* minutes. *nn* can be any number from 1 through 60.

/C:*name* Specify compatible file names.

/C* List compatible file names.

/D Disable the Screen Accelerator but leave the program in memory. This also disables screen blanking.

/E Re-enable the Screen Accelerator, after having been disabled.

/F Flush the ReView video buffer, returning its memory to the cache, where it can be shared again if needed.

/K+ Enable hot-key blanking.

/KAC:*x* Enable hot-key blanking and set the hot key to <Alt><Ctrl>*x*.

/KAS:*x* Enable hot-key blanking and set the hot key to <Alt><Shift>*x*.

/P List the current parameter settings.

/S:*nnn* Change the maximum size of the ReView video buffer to *nnn*K bytes. You can also use the left and right arrows while you are using ReView to change the buffer size.

/U Unload the Screen Accelerator, removing it from memory. If another program is loaded above the Screen Accelerator in memory, it cannot unload.

/W+ Restore screen when a program writes to the monitor.

/? Display a summary of these parameters.

Section 7

PC-KWIK PRINT SPOOLER

Introduction

This section discusses print spooling in general, discusses how to use the Print Spooler, gives an overview of the Spooler pop-up menus, gives a summary of the PC-Kwik Print Spooler's features and lists the parameters you can use to configure the Spooler to your requirements. If you already understand the concept of print spooling, skip down to the subsections titled *Feature Overview* or *Using the Spooler.* For more details about the pop-up menus and advanced features of the Spooler, see Appendix D.

Print Spoolers

Your printer is probably the slowest part of your computer system. Writing information to the printer is many times slower than writing it to a disk drive, which, in turn, is many times slower than writing to your computer's RAM memory.

Generally, a print spooler intercepts the data you send to your printer and makes a copy of it in RAM memory or on a disk. This usually takes only a small fraction of the time needed to write directly to the printer. When all the data has been saved, or *spooled*, the control returns to your program and you can continue with other tasks, while the Spooler runs in the background, sending the data out to the printer. You can even modify the file you just sent to the printer without affecting the information being printed.

Once you get used to the benefits of a print spooler, it is difficult to go back to a system where you must wait for the printer to finish printing before you can get back to work.

Features

You and your programs need do nothing new in order to take advantage of the benefits of print spooling. Just load the Spooler program at the beginning of the day, and let it do all your printing for you, automatically.

Flexible Memory Requirements

The PC-Kwik Print Spooler can use conventional memory, expanded memory, or 286/386 extended memory for its program code, without any special setup. It automatically determines the best memory to use on your system, or you can choose.

The Print Spooler does not require you to specify the amount of memory to set aside for spooling. When you are not doing any printing, the Spooler's memory is not being wasted. It is all being used by Super PC-Kwik to increase your disk performance. When you print, the Spooler takes only the memory it needs to temporarily store the data intended for the printer. As the Spooler prints the data out, this memory is again released to Super PC-Kwik. This memory sharing provides both versatile and efficient use of your computer's memory.

Saves Conventional Memory

The Print Spooler is designed to automatically save as much conventional memory as possible. It does this by sharing the memory allocated to the cache and by moving some or all of its program code out of conventional memory. How much code it can move and where it moves it to depends on your system's configuration.

The Spooler checks your system and detects what memory and software is available. It automatically configures itself to save as much conventional memory as is possible on your particular machine. You need not set any parameters or do anything special. For more details about how this feature works and what system configurations are necessary, see Appendix J, *Using Upper Memory Blocks and Expanded Memory for Program Code.*

A number of loading options are available to allow you to reduce the amount of conventional memory taken up by the Spooler, by eliminating some of the features of the pop-up print control. Even if you remove some print control features from the pop-up window, *all* spooler print control functions are still available from the DOS prompt line. For detailed information on conserving conventional memory, see Appendix D.

DOS Commands and Hot-Keys

After loading the PC-Kwik Print Spooler, you may need to take control of some of the printer functions. For example, you may want to cancel (Flush) a printing job that already has been started.

The Print Spooler allows you to invoke printer control functions in two ways:

1. By typing the standard Spooler command name from the DOS command line:

   \PCKWIK\PCKSPL

2. By pressing the hot-key combination on the keyboard, even while other programs are running:

   <Alt> <Shift> <PrintScrn>

In either case, the Spooler temporarily suspends any printing, stops any other program that may be running, and pops up a video display box to report spooler status and accept commands for the printer.

The Pop-up Display

The pop-up video display allows you to:

- Suspend, flush, and resume printing
- Insert a variety of printer control characters, including escape sequences, into the print data
- Tell the Spooler to pause between print jobs
- Reset the printer
- Disable and enable the Spooler
- Change to single-sheet printing
- Modify the printer output rate

The Print Spooler's run-time print controls are available even when your application programs are running in graphics video modes. Hercules graphics, CGA, EGA, and VGA are all supported, including high-resolution 256-color graphics. The pop-up display also supports text modes from 40 to 132 columns wide and up to 44 lines long on both color and monochrome adapters.

The Spooler displays warning messages for printer errors and alerts you when the Spooler's memory is full.

Automatic Data Compression

The amount of memory the Spooler uses to store printer data is less than the actual size of the data or file to be printed. The Spooler uses a compression technique to squeeze the data into a smaller size, so you can frequently print files which are larger than

the available Spooler memory without having to wait for the printer. The time spent compressing the data is so small, it is not noticeable.

The amount of memory the Spooler saves depends on the contents of the file. Documents, like this manual, may require 80% to 90% of their original memory size. Database or spreadsheet printouts often require only 60% to 70% of their original memory size. If you have programs which create and print graphics images, such as pie charts, graphs, or pictures, the Spooler usually requires only 10% to 40% of their original size to store them in memory.

The Spooler displays measurements of current spooler throughput values and compression factors. A separate function allows you to reset all the counters to zero.

Using the Spooler

The Print Spooler shares memory with Multisoft's Super PC-Kwik disk cache software. *Super PC-Kwik must be running in your system before you can load the PC-Kwik Print Spooler.*

Note: Before loading the PC-Kwik Print Spooler for the first time, you should verify that your printer is properly connected and working. Do not load the PC-Kwik Print Spooler until you know that your printer is working correctly.

Because the PC-Kwik Print Spooler shares the memory allocated for Super PC-Kwik's cache buffer, no memory type or size parameters are necessary for the Spooler. The Spooler automatically takes as much of Super PC-Kwik's memory as it requires from the remainder left in the buffer after the amounts of memory you have reserved for the RAM Disk, the ReDOS command list and

the ReView buffer. If you find you do not have enough memory to run the Spooler, see Sections 4, 5 and 6 for information on how to change the amount of memory set aside for these three things.

The PC-Kwik Print Spooler chooses default values for any parameters you do not specify in the load command. Therefore, you usually need to specify only a few, if any, parameters. When you invoke the Spooler, it reports the amount of memory available for spooling and the current parameters in effect, regardless of whether you have explicitly selected an option or the program has chosen a default value for you. PC-Kwik Power Pak's INSTALL routine sets up the spooler for LPT1.

Determining the Printer Type

Most printers are parallel printers connected to the parallel output port, which DOS calls LPT1. Some daisy-wheel printers use a serial (or COM for communications) port. The port where your printer cable connects into your computer may be labeled *parallel* or *serial.*

If you are not sure about type of printer you have, try using the Spooler's default port, LPT1. If this does not work correctly, consult your printer documentation, your dealer, or the person who set up your computer for you.

The examples below assume you have either placed the \PCKWIK subdirectory in your PATH command (see your DOS manual for details on how to do this) or used the CHDIR \PCKWIK command. To use the Spooler on the default parallel device LPT1, you need no parameters at all. If you wish to use any other device, either serial or parallel, you need to specify either /L or /C.

Parallel Printers
To set up the Spooler for LPT1, the default parallel printer port on most systems, just type:

```
PCKSPL
```

To set up the Spooler on any other parallel printer port, type:

```
PCKSPL /L:n
```

where *n* = 1, 2, or 3 for LPT1, LPT2, or LPT3.

Serial Printers
To set up the Spooler for a serial printer connected to port COM1, type:

```
PCKSPL /C
```

To set up the Spooler for any serial printer port, type:

```
PCKSPL /C:n
```

where *n* = 1, 2, 3, or 4 for COM1 to COM4.

Note: If you are using the DOS MODE command to redirect parallel printer output to your serial printer, you need to stop doing that. The Spooler redirects output when you use the /C parameter. See the information on redirecting serial printers in Appendix D for further information.

You may use the DOS MODE command to define serial printer characteristics. See Appendix D for an explanation of the serial printer characteristics parameters and how to set them with the PCKSPL command.

After you invoke the Spooler, you see the PC-Kwik Print Spooler sign-on screen:

```
PC-Kwik(R)   Print Spooler, Version xxxx
Copyright 1987-1991  Multisoft Corporation, All Rights Reserved.

 Print Spooler is loaded and enabled.

 Following is a list of parameters in effect:

 /L:1   Spooling device LPT1: using parallel interrupt support on int 7.
 /N-    No Output during DOS idle & keyboard input.
 /&U    Spooler is loaded in High memory.
 /K+    Hot-Key support is enabled.
 /H+    Hot-key combination is: <Alt><Shift><PrtSc>
 /G+    Hot-key support in Graphics video modes.
 /I+    Insert-String and Modify options available in resident pop-up.
 /O:1   Printer Output rate factor = 1.
 /Q+    Always Query before Inserting commands to the printer.
 /T:1   Printer Timeout factor = 1.
 /V+    Default colors for the Video display: blue on cyan.
 /W+    Warning messages for printer errors are enabled.

The Print Spooler is now Enabled and printing is not Suspended.
                                              Type "PCKSPL /?" for help.
```

Displaying Spooler Parameters

After you have loaded the PC-Kwik Print Spooler, you may display the parameters currently in effect by typing:

```
PCKSPL /P
```

A list of the parameters you are using and the hot-key combination is displayed on your screen.

Displaying Spooler Measurements

You may request a display of measurements of spooler activity by typing:

```
PCKSPL /M
```

Print Control from a Batch File

You can use batch files to issue commands to disable and enable the Spooler, flush print data, suspend and resume printing, modify the output rate or printer timeout values, and send a Form Feed, Line Feed, or Reset to the printer. The batch file contains the PCKSPL command with the parameters you choose. See the *Parameters* section below for basic control parameters, and see Appendix D for parameters that control the advanced features of the Spooler.

Unloading the Spooler

You may unload the PC-Kwik Print Spooler program by typing:

```
PCKSPL /U
```

at the DOS prompt. The Spooler is completely removed from memory. Unloading allows you to save some conventional memory when not using the Spooler, or to re-invoke the Spooler with different parameters.

If data is spooled when you request unloading, the Spooler asks if you wish to flush the currently spooled data. If your response is Y, the current data is flushed before unloading the Spooler. If your response is N, the unloading stops, leaving the Spooler active, and control returns to DOS.

For batch file commands, you may force the unloading of the Spooler, regardless of whether data is currently spooled, by adding the Flush parameter:

```
PCKSPL /U /F
```

Because of the way that DOS allocates memory, resident programs must be unloaded in the opposite order from which they were loaded. If the Spooler was not the last resident program loaded, you must first unload the programs which were loaded after the Spooler.

If the Spooler determines that other programs are loaded above it in memory, it refuses to unload. Instead, it prints out a message telling you that it cannot be unloaded. The Spooler continues to spool data and its program memory is not freed up.

If you wish to disable the Spooler's functions, you may do so by using the /D parameter or the Disable menu option. If the other programs are removed from memory, you may then unload the Spooler with the /U command.

The Help Screen

If you forget the command line parameters, you can request a display of all parameters options by typing:

```
PCKSPL /?
```

If the Print Spooler is not loaded, the help information displays loading parameters. If the Spooler is loaded, the help information covers parameters you can use while the program is running.

Getting the Spooler's Attention

The Spooler provides you with printer control functions to suspend printing, resume printing, flush print data, send commands to the printer (including escape sequences), reset the printer, pause between print jobs, change pagination modes, modify the output rate, disable, and enable the Spooler.

You may request the Spooler's print control functions in either one of two ways:

1. By typing PCKSPL from the DOS command line, with no parameters. Most Spooler print control functions are available this way, even if you have disabled the hot-key pop-up box or the pop-up box has some features removed to conserve memory.

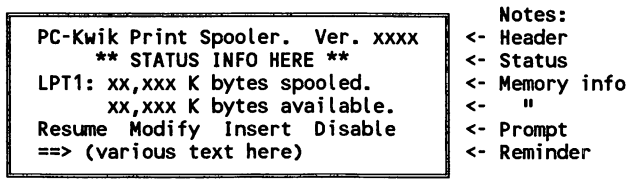
2. By pressing the Spooler hot-key combination on the keyboard, even while other programs are running. The default hot-key combination is <Alt><Shift><PrintScrn>. The hot-key feature and the hot-key combination are loading options. See the description of the parameters /K+, /AS:*x* and /AC:*x* at the end of this section. You can determine the current hot-key combination by using the /P parameter.

The Spooler Pop-Up Display

Any time you press the hot-key combination on your keyboard, the Spooler temporarily suspends any printing, interrupts any other program that may be running, and pops up a video display box to report Spooler status and accept commands for printer control.

If you type PCKSPL at the DOS prompt, the Spooler suspends printing and pops up the video display box.

The spooler pop-up display window looks like this:



By default, this video display appears in the upper left-hand corner of your screen. You may change this location with the /X:*rr,cc* load parameter.

Description

The first line is the Spooler's sign-on message and version number. The second line displays the current printing status. Possible status messages are:

No data spooled
Printing suspended
Spooler Disabled

You may also see various printer error messages here.

The third and fourth lines report how much memory the Spooler is currently using for spooling, and how much it still has available.

The fifth line is the prompt line menu of print control commands. One of the possible responses on the prompt line is always highlighted in reverse colors. This highlighted word is the current option. You can change the current option by pressing the space bar, the left and right arrow keys, or the tab key to move the highlighted box.

The last line is the reminder line. When the current option changes, the message on the reminder line also changes, briefly explaining the currently highlighted option.

Selecting the Menu Options

To initiate one of the print control options from the Spooler pop-up display, either:

1. Move the highlighted box over the option you want and press <Enter>.
2. Enter the first letter of any of the valid options on the prompt line.

Either method causes the Spooler to execute the option. Options which change the state of the Spooler also causes some of the lines to be redisplayed with new status, memory, or prompt information.

Exiting from the Pop-up Menu

You may exit from the pop-up menu by selecting either the Resume option or the Suspend option. Pressing <Esc> also causes you to exit.

The Pop-up Display Colors

The colors for the pop-up display can be modified with the /V load parameter. Some laptop computers with LCD or gas plasma displays require the /V- or /VB parameters to make the pop-up box easily visible.

Graphics Video Modes and the Pop-up Display

If you use the hot key while your program is running in a graphics video mode, the Spooler first clears the screen before displaying in a text mode. If the Spooler cannot get enough memory from the cache to save the screen, a beep sounds and there is no display.

Parameters

The PC-Kwik Print Spooler is loaded by entering a one-line command at the DOS prompt or from a batch file, consisting of the PCKSPL command and as many parameters as needed. Each parameter has a default value that is used if you do not instruct the program otherwise.

These are the basic parameters you can use when you load the Spooler, followed by the parameters you can use while the Spooler is running. Appendix D covers more advanced parameters that you may wish to use after you are familiar with the Spooler. Several examples follow the parameters.

If you wish to change the parameters after loading the Spooler, use the /U parameter to unload it, and then start the Spooler again using the new parameters.

When Loading

/C:*x* Redirect all data sent to the logical input device defined by /L or its default, LPT1, and output it to a serial printer. *x* may be 1, 2, 3 or 4 for COM1 through COM4 (see Appendix D for more details on serial printers).
Default: No redirection.

/G+ Support pop-up print control in graphics video modes.
Default: /G+

/I+ Support the Insert-String and Modify functions from the pop-up print controls. If you do not need to send escape sequences to the printer, or modify the paging mode or output rate *while other programs are running*, using /I- significantly reduces the amount of program memory used by the Spooler.
Default: /I+ (Insert-String and Modify functions are available in the pop-up display).

/K+ Activate the Spooler hot-key feature. If /K- is used, print control is available only from the command line by typing PCKSPL. *Note:* Disabling the hot key significantly reduces the amount of program memory required by the Spooler.
Default: /K+ (load a hot-key pop-up box)

/L:*n* Defines which parallel printer to use as the logical input device. *n* may be 1, 2, or 3, for LPT1, LPT2, and LPT3.
Default: /L:1 (the standard print device, LPT1)

/L#*n* Suppresses interrupts on the logical input device. *n* is 1, 2, or 3, for LPT1, LPT2, or LPT3. Normally the Spooler detects if a printer can use interrupts, and if so uses them to speed up output.
Default: /L:1 (use interrupts if possible on the standard print device, LPT1)

/P+ Display parameter summary on invocation. If /P- is specified, the parameter summary is not displayed.
Default: /P+ (display summary)

/? Displays a summary of these parameters. If you use this parameter with other loading parameters, the help summary displays but the program does not load.

While Running

The following parameters may be used after the Print Spooler has already been loaded. Any of these parameters may be used from batch files or from the DOS prompt line.

/1 Other parameters in the command line are to act on the first Spooler loaded. This is needed only when two Print Spoolers are loaded. See Appendix D for details about loading and using two Print Spoolers. Using /1 with /U has no effect. All parameters act on the last or only Spooler loaded if /1 is not used.

/D Disable but leave program in memory. If data is currently spooled, the Spooler refuses to disable, unless a /F request is included in the same command line.

/E Enable if previously disabled.

/F Flush all spooled data and reset all measurement values to zero (see /M). /F can also be used with /U or /D to unconditionally unload or disable the Spooler, even if data is spooled. In this case there is no query message requiring user input.

/IF Send a Form Feed character to the printer.
/IL Send a Line Feed character to the printer.
/IR Reset the printer immediately.

/M Display measurements of Spooler activity.
/MR Reset measurement values to zero.

/O:*n* Select the output rate to the printer where *n* is between 0 and 9 and 9 is the fastest.

/P Display all parameters currently in effect. This display is similar to the parameter summary shown upon loading.

/R Resume printing if it was previously suspended.

/S Temporarily suspend printing until the next Resume command. *Note:* Unlike the pop-up Suspend command, you may use /S even when no data is currently spooled.

/T:*n* Select the timeout value for printers where *n* is a number between 0 and 9, and 0 is the shortest timeout value.

/U Unload the Spooler, removing all of its code and data from memory. If any data is currently spooled and not yet printed, the Spooler first asks you for permission to flush that data, unless a /F (flush) request is included in the same command.

/? Display a summary of these parameters.

Examples

Example 1: PCKSPL /L:2

Meaning: Set up the Spooler to spool all data sent to the parallel printer device LPT2.

Example 2: PCKSPL /V-

Meaning: Spool all data sent to the default parallel printer, LPT1. Set the alternate colors for the hot-key pop-up display.

For More Information

Appendix D contains detailed information on the pop-up menu options, running the Spooler from the DOS command line, error conditions the Spooler can detect, reporting full spooler memory, pagination modes for single-sheet documents, automatic page breaks, normal mode with no pagination, controlling the output rate, printer timeouts, spooling multiple print devices, setting up serial printers, and advanced parameters. Error messages can be found in Appendix H.

Common Questions

Q. *What happens when the PC-Kwik Print Spooler uses all of its available memory?*

A. While the PC-Kwik Print Spooler is efficient in its use of memory, you may at times send more data than it has memory for storage. In this case, the input side of the Spooler (the part that accepts data from your programs) must wait for

memory to become available before it can accept any more data. As the output side of the Spooler prints more data to the printer, memory is freed up for use by the input side.

Until enough memory is freed up to allow spooling the remainder of the file, the Spooler and your program wait for the printer.

Q. *Doesn't sharing memory for print spooling make Super PC-Kwik less efficient?*

A. Whenever the PC-Kwik Print Spooler uses memory for spooling, it reduces the size of Super PC-Kwik's cache. Theoretically, since the cache's efficiency is generally proportional to its size, you could conclude that Super PC-Kwik is not speeding up your disk accesses as much as it would without the Spooler. In practice, Super PC-Kwik's benefit to you is reduced only at the point where the cache no longer contains the disk data that your program is currently requesting. Since Super PC-Kwik always gives up the least recently used cache memory to the Spooler, chances are good that the disk data you need is in the cache. If you have no print spooler at all, your system must wait until an entire file is printed before it can do any other work. It has no chance to take advantage of the Super PC-Kwik cache, regardless of the cache size.

You could use a print spooler which reserves its own memory and does not borrow from Super PC-Kwik. But that spooler's memory would never be available for any other purposes. Since the amount of time you spend printing out documents and data is probably a small percentage of your total work day, allowing the print Spooler and Super PC-Kwik to share memory is a very efficient arrangement.

Q. *Can't I reserve some cache memory that the Spooler cannot use?*

A. At first glance, it might seem best to reserve some minimum cache space for Super PC-Kwik. In practice, however, the performance improvement provided by the disk cache is useless if a computer is waiting on the printer because the Spooler is short on memory.

For this reason, the Spooler is allowed to take as much memory as it needs from the cache. As data is printed, this memory is returned to the cache.

Q. *What if my other programs already have a print spooling function built in?*

A. Many programs now have their own print spooling built in, including Microsoft Windows and many word processors. There is no inherent reason why the Spooler should not function correctly with these other print spooling functions. The question is: do you want it to?

An application program with a spooling function built in allows you to continue working on other files while printing continues. But it does *not* usually allow you to exit the main program while it is still printing. If the PC-Kwik Print Spooler is loaded before your application program, it spools the data, and allows you to exit the application program while printing continues.

However, using both spoolers is redundant and wastes memory and execution time. Some other spoolers use the disk and can store more data than the RAM-based PC-Kwik Print Spooler. And because the application program knows more

about the specific files you print, it may provide more control over printing than the Spooler can. For example, it may allow you to cancel the printing of a particular file, while other files remain spooled. If you feel that the cons outweigh the pros you can easily disable the PC-Kwik Print Spooler temporarily while you use your word processor or other application. Then, when you are finished with the program, you may enable the Spooler.

Appendix A

ADVANCED USE OF SUPER PC-KWIK

Advanced Parameters

Besides the basic parameters described in Section 3, these additional parameters allow you to customize the Super PC-Kwik program to your system's requirements. If you don't use a parameter or don't give a value with it, the program uses a default. Defaults are listed with each parameter. For each parameter, + turns on the option and - suppresses the option. The default is +, unless otherwise specified. Where applicable, *d* refers to a disk drive letter, *n* stands for a number 0-9, and *x* means any alphanumeric character, including punctuation. Unless otherwise specified, the colon between a parameter and its value is optional.

/-d Do not cache drive *d*.

You may wish to restrict caching for certain drives. To do so, add the /- parameter, where *d* is a drive letter for each drive which should not be cached. No colon is needed. You may specify as many /- commands as you need, using one for each disk which is not cached.

Note: Be sure the - character is *before* the drive letter.

For example, if you have two physical hard disk drives and two floppy drives, and you wish to restrict caching on hard disk drive D and floppy drive B, specify:

```
SUPERPCK /-D /-B
```

Some copy-protected programs refuse to recognize a key diskette when it is cached. Use this parameter to specify that Super PC-Kwik is not to cache the drive containing the key diskette. You can also use this parameter to dedicate the cache to a specific drive by specifying all other drives should not be cached.

If you use diskettes which are not in DOS format (such as when importing data from a CP/M diskette), do **not** cache the drive you use to access them. If you request no caching on a physical drive that serves as two logical drives, the Super PC-Kwik program suppresses caching on both logical drives.

Default: All local diskette and hard disk drives are cached. RAM disks and remote network drives are not cached.

/&U- Do not automatically move the parts of Super PC-Kwik which usually reside in conventional memory into the upper memory blocks (UMB, addresses from 640K-1024K). Normally, if you specify that the cache buffer go into expanded memory, only a small part of the code for the cache moves into UMB; the track buffers, tables and remainder of the code reside in expanded memory. If you specify that the cache buffer go into extended memory, the track buffers, tables, and all code move to UMB. If you specify that Super PC-Kwik run in conventional memory, everything moves to UMB if there is enough UMB memory available.

Default: /&U (load into UMBs if possible)

/7- /7- allows Super PC-Kwik to use expanded memory for the cache buffer when your memory manager is not

fully compatible, by changing the way expanded memory is accessed and ensuring that the other Power Pak programs do not load their program code into expanded memory. If your memory manager is not compatible with Super PC-Kwik and you use expanded memory without using /7- for Super PC-Kwik, you may experience system crashes and possible lost data.

Default: /7+, allowing the other Power Pak programs to load their program code into expanded memory. See the discussion of TESTEMM in Section 2 for more detail.

/B+ When copying data to or from the cache, copy batches of sectors at a time. This option increases performance, especially when the cache is in extended memory.

Note: When extended memory is used for the cache, batch copying may increase the length of time interrupts are turned off. If you use extended memory for your cache and you have trouble with high-speed data communication (e.g., over a 2400-baud modem), use /B-. If your cache is in conventional memory, expanded memory, or extended memory which has been converted to expanded memory by a memory manager, use /B+.

Default: /B+

/D Use advanced support and PowerWrite to increase the performance of writing to diskette drives. The options for /D are:

- \- Advanced support off, PowerWrite off
- \+ Advanced support on, PowerWrite off
- * Advanced support on, PowerWrite on

Default: /D+ for IBM and 100% compatibles; /D- for the IBM PC Junior and unrecognized compatibles. Super PC-Kwik checks your system to determine the correct default.

Note: To take advantage of advanced cache support for diskette transfers, your diskette controller must be 100% IBM compatible.

/Ex:*nnnnn* Set the lowest address available to the cache in extended memory at memory location *nnnnn*K. *X* is either M or P, depending on whether you want to minimize the conventional memory used, or increase the performance of the cache. (See Section 3.)

It is seldom necessary to use this parameter because Super PC-Kwik automatically detects most programs which use extended memory, such as IBM's VDISK.SYS RAM disk, and it automatically lends as much extended memory as is available to other programs which request it.

If you are using any program in extended memory which Super PC-Kwik does not seem to recognize, use this parameter to tell Super PC-Kwik to use only memory above location *nnnnn*K bytes. Be certain you know what location to give Super PC-Kwik so that it runs above the other program. We recommend using the /R or /S parameters if you need to restrict the amount of extended memory used by Super PC-Kwik.

Note: Super PC-Kwik allocates extended memory from the top of memory down. When you use the /Ex:*nnnnn* parameter, Super PC-Kwik may not actually reach the

location you specify, but it never allocates extended memory below the location you specify.

Note: Microsoft's RAMDrive, included with Windows 2.1 or MSDOS 4.0 and later, also allocates extended memory from the top down. The memory it allocates does not show in the memory allocation table displayed by the cache. Some versions of RAMDrive have a bug and we recommend that you do not use it in extended memory while Super PC-Kwik is using extended memory for caching. We recommend you use the RAM drive included with Power Pak.

Default: /E:1024 when extended memory is used for the cache.

/G+ Use the boot sector information found on the drive when that information contradicts the information the BIOS has about the drive.

Use /G- if the information from the BIOS is to be used instead of the boot sector information.

Occasionally, the boot sector on your disk contains information about the number of heads or the number of sectors per track that differs from the information the BIOS provides about the disk. When Super PC-Kwik detects this difference, it issues a warning message. This parameter lets you choose which set of information to use when the two sets contradict each other. You can choose to have Super PC-Kwik pause when it displays the warning message and wait for you to strike a key before proceeding; see the /K+ parameter below.

Default: /G+

/H Use advanced support and PowerWrite to increase the performance of writing to hard disk drives. The options for /H are:

- \- Advanced support off, PowerWrite off
- \+ Advanced support on, PowerWrite off
- * Advanced support on, PowerWrite on

Default: /H+ for IBM ATs, most 386s and compatibles; /H- for others. Super PC-Kwik checks your system to determine the correct default.

Note: To take advantage of advanced support, your hard disk controller needs to be 100% IBM compatible. ATs and compatibles can use advanced support of hard disk transfers even if the controller is not IBM compatible. For PCs or XTs see *Advanced vs. Generic Support* for more information. More information may be contained in the DISKREAD.ME file.

/K+ Super PC-Kwik pauses and waits for you to type a key if a warning message displays while you are loading the program. Use /K- if you would prefer that loading proceed without any pauses. See Appendix H for a list of warning messages.

Default: /K+

/O+ Use the optional algorithm for advanced support of disk transfers.

This gives disk reads priority over disk writes. It affects diskette transfers when using the /D+ option and hard disk transfers when using the /H+ option. Depending on your applications and the speed of your disk drives, it may provide an additional performance gain.

This parameter usually improves the effect of the /Q+ parameter (see below) when you copy files from one hard disk directory to another or from your hard disk to a diskette.

Default: /O-

/Q+ Quickly return DOS prompt.

When you are using /D+ or /H+, this parameter often allows a faster return to the DOS prompt while disk transfers associated with the previous command or application are still being completed. Returning the prompt allows you to enter additional commands while the disk transfers are taking place.

Warning: Be sure to wait for the lights on any diskette drive to go off before changing diskettes when using this option. Also wait for the activity indicator on your hard disk to stop before you turn off or reboot your system.

If you select this option, you may wish to specify the /O+ parameter also (see above).

Default: /Q-

/R:*nnnnn* Reserve *nnnnn*K bytes of the memory type used by the cache for programs loaded after Super PC-Kwik. Allocate the rest of the memory to the cache. Note that /L:*nnn*, discussed in Section 3, is usually more effective, allowing the cache to automatically allocate what is needed for other programs.

This parameter can be more convenient than the /S parameter because the size you specify is based on an

estimate of how much memory your applications require, and Super PC-Kwik calculates the size of the cache from the amount of memory left. However, the /L parameter is generally best, because it can dynamically change the cache size to accommodate any memory requirements for other programs.

Default: /R:480 for conventional memory. /R:0 for UMB, expanded and extended memory.

/S:*nnnnn* Allocate *nnnnn*K bytes of RAM for Super PC-Kwik. Unless you need a specific cache buffer size, it is usually better to allow Super PC-Kwik to determine the amount of memory it needs and share and lend memory with other programs. See also the /L parameter in Section 3 and the /R parameter above.

If you set up the cache in conventional memory, *nnnnn* should be between 64 and 512. If you set up the cache in expanded or extended memory, *nnnnn* should be between 64 and 16384.

Default: None. If the /S parameter is not specified, the /R parameter default applies.

/T+ Whenever an application requests a disk read, read the rest of the track into cache memory.

Disk space is divided into tracks, which are composed of sectors. There are typically 9 to 18 sectors per diskette track and 17 or more sectors per hard disk track. Because DOS frequently requests information from nearby sectors soon after requesting a given sector, reading the rest of the track in advance increases per-

formance, but it uses about 8K bytes of memory to do so.

You can disable this feature by using /T- if you need to save the extra memory or if your application accesses many small files scattered throughout the disk. You may also wish to disable full-track buffering if your disk has many bad sectors that have been mapped out.

If your system has a disk with a large number of sectors per track and you have the memory to allocate a large cache, you may wish to increase performance by using /TL, which defaults to the largest track size on your disk. You can also specify a track size to use with /T:*nn*.

Default: /T+, with a track size of 17 or the largest number of sectors per track, whichever is smaller.

/TL Perform track buffering using a buffer that holds up to the largest number of sectors per track detected.

Default: /T+

/T:*nn* Perform track buffering using a buffer that holds up to *nn* sectors per track.

When you use the /T+ option, Super PC-Kwik automatically chooses a buffer size. The track buffer size chosen by the program usually produces the best performance for the least memory, but if you have additional memory to use and a disk with a larger track size, use the /T:*nn* option.

Default: /T+; the maximum is 72 sectors

/V+ Use volume-change detection hardware to detect the change of diskettes in a diskette drive.

High-capacity and 3½ inch diskette drives often have hardware that detects when a drive door has been opened. This volume-change detection hardware reduces software overhead. See *Changing Diskettes in High-Capacity Drives* to determine if your high-capacity drives have volume change detection hardware.

This parameter does not affect how 360K drives are handled as they never include volume-change detection hardware.

Default: /V+

/W+ Check write requests against the cache to determine if the disk already has identical data. If so, suppress the write.

Note: In most cases this option improves performance somewhat. But with extended memory, performance often is best if you specify /W-.

Default: /W+

/X+ Use protocols for DOS version 3.2 and earlier to recognize and cache your hard disks. If Super PC-Kwik refuses to recognize or cache your hard disk, you may wish to try /X+.

Default: If the DOS in use is version 3.3 or 4.*x*, Super PC-Kwik uses the DOS 3.3 protocols. Otherwise, it uses the older DOS 2.0/3.2 protocols. Super PC-Kwik recognizes the version of DOS on your system to determine the default.

Examples

Example 1: SUPERPCK /E+ /B- /T-

Meaning: Set up the cache in extended memory. Suppress batch copying to minimize the amount of time during which interrupts are turned off. Do not read any more of a track than has been requested by DOS or the application. Allocate as much of extended memory as is available to the cache. Share the memory with the Power Pak programs and lend out that memory as needed to other applications.

Example 2: SUPERPCK /C+ /S:128 /-A /H-

Meaning: Set up a 128K-byte cache in conventional memory. Do not cache drive A and suppress advanced support of hard disks. Share the memory with the Power Pak programs and do not lend to any other applications, since the cache buffer is in conventional memory and not expanded or extended.

Suggested Cache Sizes

In general, a larger cache means that you avoid more physical disk accesses. The best cache size is the largest you can afford.

If you are setting up your cache in conventional memory, the cache's size is constrained by the amount of memory that your applications require. Super PC-Kwik does not lend conventional memory to other programs. An easy way to determine an appropriate cache size is to find the maximum memory that your applications require, then use this information to reserve enough memory for your applications, using the /R:*nnnnn* parameter option described in Section 3. The Super PC-Kwik program uses the rest

of your conventional memory for the cache and code, and shares that memory with the other Power Pak programs.

If you have expanded or extended memory, Super PC-Kwik automatically allocates as much as possible for its cache and code. It shares the memory with the other Power Pak programs, and lends out as much as possible to your other applications, so you automatically conserve conventional memory while getting the largest cache size possible.

Using the Least Amount of Conventional Memory

If you want to run Super PC-Kwik using the least amount of conventional memory, we suggest that you put your cache in either expanded or extended memory and put the code for the cache into upper memory. Use either /A or /E to choose expanded or extended for the cache. If upper memory is available, Super PC-Kwik defaults to using it, so you need not specify anything on your command line to take advantage of this memory-saving feature.

Note: If you do not specify otherwise, Super PC-Kwik uses expanded memory and Upper Memory Blocks (UMBs), if they are available. If expanded memory is not available, it looks for extended memory next. Thus, explicitly specifying the memory type is not usually necessary.

When run in conventional memory, all the program code, the track buffers, the cache buffers, and the tables reside in conventional memory. The default amount of conventional memory reserved for other applications is 480K bytes of the 640K-byte total.

If you have expanded memory, Super PC-Kwik defaults to using expanded and places most of the code, the buffers and the tables in expanded memory, leaving only a small amount of code in

conventional memory. If you have upper memory available, this code moves to the UMBs, freeing up conventional memory for other applications.

If you specify extended memory, Super PC-Kwik puts the cache buffers into extended memory but leaves its code, the track buffers and the tables in conventional memory. If UMB space is available, the program code, buffers, and tables are placed in upper memory instead of conventional memory (unless you request otherwise with the /&U- parameter). When the cache is in extended memory, it minimizes the use of conventional memory by default.

If you are willing to give up a little performance, you can reduce the amount of conventional memory used by specifying a track buffer of 4 or 8, using the /T:*nn* parameter option. To see the effect of the smaller number of track buffers, unload Super PC-Kwik, reload it with the new track size, and look at the amount of conventional memory used.

DOS BUFFERS Command

The DOS BUFFERS command allocates memory for buffers to speed up disk accesses. Super PC-Kwik makes disk accesses fast enough that only a few buffers are needed. Many application programs recommend that you set the DOS BUFFERS command for 15 or more, but you won't usually need as many buffers with Super PC-Kwik. You can do a little experimenting with the applications you use most to determine the number of buffers needed to achieve the best performance while using the least conventional memory. We recommend setting BUFFERS equal to 3 or 4. See your DOS manual for instructions on setting the buffers value and see Appendix F for help in editing your CONFIG.SYS file.

Loading and Unloading Using Batch Files

We recommend that you start the Super PC-Kwik program automatically each time you boot your system by placing the appropriate command in the AUTOEXEC.BAT file, executed each time DOS is started. The INSTALL program may have done this for you. When you choose to have Super PC-Kwik start automatically during the installation procedure, the INSTALL program appends either the SUPERPCK command itself or a call to POWERON.BAT to your AUTOEXEC.BAT file. Check your AUTOEXEC.BAT file before making further changes.

You may wish to have Super PC-Kwik run using different sets of parameters for each of your major applications. Rather than load Super PC-Kwik each time your system boots, place the Super PC-Kwik command in the batch files you use to start up your application programs. Then Super PC-Kwik loads with the appropriate parameters for each application. Be sure to unload the program at the end of each application. There is one disadvantage to loading Super PC-Kwik with each application: the application programs themselves never load from the cache. This may be a small price to pay for the ability to customize the cache size to the requirements of each of your programs.

Changing Diskettes

When you are using Super PC-Kwik to cache diskette drives, an application program sometimes asks you for additional information before the diskette drives have quit operating and the lights have turned off. Feel free to begin entering your next response or command whenever the application indicates that it is ready for it.

However, if your application asks you to change diskettes, wait until the diskette drive lights have turned off or all diskette activity is finished before removing the existing diskette from its drive.

Changing Diskettes in High-Capacity Drives

The high-capacity diskette drive available on the IBM AT usually detects when the disk drive door has been opened. To double-check that your high-capacity drive supports this function:

1. Load Super PC-Kwik with the /V+ parameter.
2. Place a diskette in the high-capacity drive.
3. Use the DIR command to obtain a directory of the diskette.
4. Remove the diskette from the drive.
5. Place a different diskette with a different set of files in the drive.
6. Use the DIR command to obtain a directory of this diskette.

Observe whether the directory obtained in step 6 accurately reflects the contents of the diskette in the drive. If it is a directory listing for the previous diskette, the volume-change hardware is not working correctly. If so, unload Super PC-Kwik and reload it with the /V- parameter so that the program detects the volume change for you.

Some high-capacity drives depend on the spring-loaded ejection action of the drive to detect the diskette change. When the diskette does not eject as a result of the spring action, the drive may not detect that you have pulled the diskette out of the drive and replaced it with another. To test for this case, repeat the steps above with the following modification: use your thumb to prevent

the diskette from springing out of the drive in step 4, then remove it by pulling it from the drive with your fingertips. If this change causes step 6 to produce the wrong directory listing, use the /V- parameter.

Note: If you occasionally use your computer without Super PC-Kwik loaded, be especially careful when changing the diskette in your high-capacity drive. DOS may assume the volume-change hardware is working properly even if it is not.

Advanced vs. Generic Support for Super PC-Kwik

The Super PC-Kwik program offers optional advanced support of diskette and hard disk writing in addition to generic support of diskette and hard disk read caching. If you do not specify whether you want generic or advanced support, the program attempts to guess which is best for your computer. In many cases it chooses correctly. When it is not sure, it selects the generic option. Generally, all AT, 286, and 386 class machines can use advanced support, and Super PC-Kwik correctly chooses it.

If your PC or XT computer has an IBM hard disk controller and hard disk, Super PC-Kwik defaults to generic support. You can try advanced support of hard disk transfers by loading the program with the /H+ parameter. If your controller is compatible, Super PC-Kwik accepts the parameter and you can use advanced support. If the Super PC-Kwik program detects that the controller is not compatible, it reverts automatically to generic support.

If you have a PC or XT class machine and you wish to perform an additional test to see if your controller is compatible, you can try:

```
SUPERPCK /U
SUPERPCK /H+ /Q+
SUPERPCK /P
```

If the parameter list shows /H+, Super PC-Kwik has determined that your system can probably support advanced caching. If the parameter list shows /H-, Super PC-Kwik has determined that your system does not support advanced caching and there is no need to continue the test.

To continue the test, type:

```
COPY SUPERPCK.EXE SUPERPCK.CPY
COMP SUPERPCK.EXE SUPERPCK.CPY
SUPERPCK /U
```

If this produces no error messages other than "EOF mark not found," advanced support has been successfully performed on your disk drive. (On some IBM compatibles the COMP program may be called FC).

If this produces error messages, you should run only in generic mode.

In any case, even if your particular disk configuration should be incompatible with advanced support, Super PC-Kwik does standard disk caching and improves your disk's performance considerably.

The PowerWrite Option in Advanced Support

Super PC-Kwik has a new option which can speed up your computer's performance even more than before. This option is called PowerWrite.

What is PowerWrite?
PowerWrite is an extension of advanced support. It dramatically increases the speed of writing data to your disk by buffering disk writes to place the data on the disk more efficiently.

When an application writes data to the disk, it frequently does not matter what order the writes occur in as long as all of the data eventually gets stored on the disk. Since application programs require that data read from the disk be read in the order the application program requests the data, PowerWrite does not sort disk read requests. Application programs which do a lot of disk writing can perform up to 60% better.

How Do You Activate PowerWrite?
PowerWrite is off by default. You must explicitly activate it if you want to use it to increase your system's performance.

PowerWrite is an extension of Super PC-Kwik's advanced support, which buffers disk requests. If your computer hardware can use advanced support, you can use PowerWrite. If your computer cannot use advanced support, you cannot use PowerWrite. Super PC-Kwik automatically tests your hardware to see if advanced support works, and will not allow you to turn on PowerWrite if advanced support is unavailable.

Activate PowerWrite by using the new /H* or /D* options. PowerWrite may not be activated separately for hard disks or floppy disks; turning on PowerWrite for one automatically turns it on for

the other. If you want to use PowerWrite for your hard disk but not for your floppy drives, you must turn off caching entirely for the floppy drives by using the */-d* parameter, where *d* is the drive letter for the drive you don't want to cache.

For best results, we recommend you also use the /O+ (optional algorithm for advanced support) and /Q+ (quickly return DOS prompt) parameters. In addition, do not turn off the track buffering feature; use /T+ (the default) or /T:*nn* rather than /T-. PowerWrite requires that the track buffer be active and works most efficiently with the default track buffer size.

Does PowerWrite Delay Writing Data to the Disk?
Disk caches other than Super PC-Kwik sometimes include options to add artificial delays to disk writing, so that more writes can be buffered. We have found that adding this artificial delay does not improve overall performance but it does put your data at risk. There is always a slight possibility of data loss when data is held in a buffer before writing it; if power loss or a system crash happens before the data is written out to the disk, that data is lost. Delayed writes increase this risk substantially. The longer the delay, the bigger the risk. And with delayed writes, you might turn off your computer or remove a floppy disk before a cache is finished writing, because the light can come on again after you think everything is done. When the disk activity light on your computer goes out, you know that all the disk writing is done. Since there is no significant performance increase to warrant the risk, Super PC-Kwik does not delay writes.

When Should You Avoid Using PowerWrite?
Some application programs, such as databases with a rollback feature, depend on writing to the disk in a particular order. Such applications may order the disk writes so that a machine failure or

power failure at any point won't cause data loss or corruption. PowerWrite changes the order of writing data to the disk to improve performance and so might affect your ability to roll back data if you suffer a power or machine failure.

You may have no way of knowing if your application depends on the order of disk writing. There is no easy way to tell. If your application guarantees that you will never lose data or that you can roll back your changes, then that application *may* expect disk writes to occur in the same order they are requested. You may prefer to leave PowerWrite turned off for these applications, as it could interfere with the program's ability to guarantee your data's safety.

Common Problems

If a Hard Disk is Not Cached

If Super PC-Kwik won't cache one of your drives, it is probably because:

1. The drive is a RAM drive. In this case, the drive already exists in memory and it would be redundant for the cache to transfer data to its cache buffer in memory.
2. The drive is a remote network drive. Caching might violate file or record locking protocols, so Super PC-Kwik won't cache remote drives.
3. The drive is a Bernoulli drive and you do not have the PC-Kwik driver in your CONFIG.SYS file. Place this line in your CONFIG.SYS file:

   ```
   DEVICE=C:\PCKWIK\PCKWIK.SYS
   ```

4. You are using DOS 3.3 or above, but certain DOS functions are not completely supported by the disk driver you are using,

such as Speedstor. This situation can usually be resolved by using the /X parameter, which instructs Super PC-Kwik to treat your DOS as if it were version 3.2 or lower.

INTERNAL STACK FAILURE Error

DOS versions 3 and 4 set a default number of stacks. This default may not be large enough if your system has controllers which support 1-to-1 interleave. If you receive an INTERNAL STACK FAILURE message or something similar, try one of the following methods to resolve the problem.

Method 1. *Maximum performance at the expense of conventional memory.*

The default number of stacks for DOS 3 and 4 is 9. Increase this by adding a line to your CONFIG.SYS file such as STACKS=*x*,128. *X* is the number of sectors per track for your hard disk. Some typical values for *x* are:

Drive type	*Sectors per track*
MFM	17
RLL	25 or 26
ESDI	34

Method 2. *Minimum conventional memory usage at the expense of maximum performance.*

By default, Super PC-Kwik allocates a track buffer which allows it to read up to a full 17-sector track at a time. To save memory, restrict the track buffer to eight sectors; add /T:8 to the SUPERPCK invocation line in your AUTOEXEC.BAT file. This can produce about 90% of the performance of Method 1, but performances may vary significantly.

The only way to be sure is to try both methods and compare the performance of the applications you typically use.

Swap Programs

There are a variety of programs which address RAM cram, the need to load more programs than will fit in 640K of conventional memory. These programs often free up conventional memory by swapping resident programs to expanded or extended memory or to disk. An example is the family of SWAP programs from Innovative Data Concepts.

If you are using any such swap programs, be sure to load Super PC-Kwik and any other PC-Kwik programs before the swap program. Swapping the cache out and bringing in back in later can cause it to contain data that is seriously out of date, and may compromise the data that is brought in from the disk.

Invalid Boot Sector Errors

In rare circumstances, Super PC-Kwik may issue the following warning message during its installation:

WARNING: Boot sector for drive *d* invalid; previous information used.

The first sector of drive or partition has an invalid signature. When the boot sector has a valid signature, Super PC-Kwik reads certain drive parameters from the boot sector and compares them to values obtained previously from the system BIOS or previous disk partitions. Some format programs may not put the IBM-standard signatures in the boot sector while they otherwise format the disk correctly. In this case, you can allow Super PC-Kwik to continue by using the information it has obtained from the BIOS and/or previous disk partitions.

If you wish to double check the drive parameters which Super PC-Kwik is using, add a /**I** parameter when you load Super PC-Kwik. This provides drive table at the end of the loading display. You can compare the Track Size (in sectors per track) and Heads information to the dimensions of your drive(s). You can also see the Logical Sector Size (LSS) and Physical Sector Size (PSS). The former is the sector size used by DOS for the particular driver and the latter is the sector size used by the BIOS.

Note: the Track Size shown for diskette drives is the default value; Super PC-Kwik automatically updates this value as you access various diskette types.

Appendix B

ADVANCED USE OF THE KEYBOARD ACCELERATOR

Introduction

This Appendix discusses advanced use of the Keyboard Accelerator, including advanced parameters, selecting special keys for fast response, using the ReDOS command startup file, compatibility with other applications, and using the Keyboard Accelerator with foreign keyboards. For basic information about the Keyboard Accelerator, see Section 5.

Advanced Parameters

These parameters control many of the functions described in this Appendix. For basic parameters you use more often, see Section 5. A + indicates the option is turned on and a - indicates it is turned off. The default, unless otherwise specified, is +. The colon is optional unless otherwise specified.

While Loading the Keyboard Accelerator

/&*x* Choose which type of memory to load the Keyboard Accelerator code into. Choosing upper memory or expanded memory reduces the use of conventional memory, which is limited to 640K bytes. *X* is one of:

- U Upper memory (640-1024K bytes)
- A Expanded memory (conforming to LIM 3.2 or above)

C Conventional memory (to 640K bytes)

By using /&U- or /&A-, you can prevent the Keyboard Accelerator code loading in upper memory or expanded memory.

Default: Determined by the Keyboard Accelerator. First, it checks whether an XMS driver is installed. If one is, and upper memory is available, the default is /&U. If no XMS driver is installed, but an expanded memory manager is installed, Super PC-Kwik is using expanded memory, and expanded memory is available, the default is /&A. Otherwise, the default is /&C.

/S:*xyz*: Add keys *x*, *y*, and *z* to the set of special keys. The colons are required.

Default: /S:: (no special keys)

While Loading or Running ReDOS

/F*X*:*name* Specify the name of the special startup command file to read into the ReDOS command list when you first boot your system. *X* is one of:

A Append contents of *name* to the ReDOS command buffer.

R Replace the contents of the ReDOS command buffer with the contents of *name*.

S Save the contents of the ReDOS command buffer into file *name*.

Default: The default action is to append; the default file name is REDOS.FIL; the default directory is the current directory, or the directory from which you ran the PCKKEY program, usually \PCKWIK.

/V+ Use the standard video attributes for the pop-up command window. Using /V- selects alternate colors for color displays and reverse video for monochrome displays.

Default: /V+ (use default attributes)

/VB+ Specify the pop-up attributes to be reverse monochrome on color displays that emulate color video adapters but have only two colors. This applies to many laptop computers. If you are using a monochrome system and the ReDOS window does not look right, try using /VB+ or /VB-. You can also use these options to set the colors to black and white on a color system.
Default: /V+ on color systems; /VB+ on monochrome systems

/Z:*nn* Specify the maximum amount of memory, in K bytes, that ReDOS uses for its command list and shares with Super PC-Kwik. *nn* may be any integer between 1 and 99. A 1K list holds about 50 commands of about 20 characters each).

Default: /Z:2 (share up to 2K bytes)

Selecting Keys for Fast Response

Regardless of which keys you choose to accelerate, you may wish to limit the keys which get a fast response. If you use the same fast response on all keys, you may find some character keys repeating when you don't want them to. If you specify no parameters, only the four cursor keys have a faster response; this is fine for most applications.

Selecting Which Keys to Accelerate

The /S:: option allows you to add keys to the set of special keys controlled by the /R*n*S and /T*n*S options. This allows you to select a special subset of characters which you often want to speed up or to have a faster response, without causing all characters to be accelerated. This set always includes the four cursor keys on both the numeric keypad and the cursor keypad of 101-key keyboards. In addition you may add backspace, delete, space bar, tab, enter (return), underline, dash, comma, period, colon, semicolon, and the letter X.

This table lists the keys you can select with the ASCII characters recognized by the Keyboard Accelerator in the /S:: parameter. Any other characters are ignored.

KEY	SYMBOLS
backspace	B b E e
delete	D d
space bar	S s <Space>
tab	T t
enter (return)	R r
dash/underscore	- _
colon/semicolon	;
comma	,
period	.
x	X x

Example 1: PCKKEY /R4A /S:b _d: /T4S

Meaning: Speed up the repeat rate for all keys to 36 characters per second. Set the response time for the four cursor

keys, backspace, space bar, underline, and delete keys to 220 milliseconds.

Example 2: PCKKEY /S:_.: /R7S /T3C

Meaning: Speed up the repeat rate for only the underline, period and cursor keys to 63 characters per second. Set the response time for the cursor keys only to 165 milliseconds.

The Wild Key

When /R*n*A is in effect, all keys are accelerated automatically; this is the default setting. However, if you select /R*n*S, only special keys are automatically accelerated. In this case, you can still speed up the repeat rate of any key which is not already being accelerated, by holding down the 5 key on the numeric keypad and the desired key at the same time. The faster repeat rate for the selected key happens only while both keys are held down. If the NumLock is on, the 5 key acts as a normal 5, not a Wild key.

Hot-Key Commands

The following hot-key combinations control the Keyboard Accelerator from the DOS prompt. You can press these combinations at any time to change the parameters for mode, response time, and repeat rate.

This key	Controls this feature
<Alt> +	Repeat rate faster (more characters per second).
<Alt> -	Repeat rate slower (fewer characters per second).
<Alt> <Ctrl> +	Response time faster (less time until keys starts repeating).

<Alt><Ctrl>-	Response time slower (more time until keys starts repeating).
<Alt><Ctrl>1	Enter/exit Spreadsheet mode
<Alt><Ctrl>2	Disable/re-enable Keyboard Accelerator
<Alt><Ctrl>3	Disable/re-enable hot-key commands

ReDOS Command Buffer Startup File

If you wish, you can have ReDOS start up with a series of common commands already loaded into the command line buffer by using the /F:*name* parameter when you invoke the Keyboard Accelerator. The contents of file *name* are placed into the command editor buffer and are immediately available for you to use. If you routinely use the same set of commands, you may wish to load the buffer with them to save having to type them the first time. You can also load commands from this file into the existing buffer after ReDOS is running. When you load the contents of the file into the list, the contents of the file are added to the contents of the list.

If you specify a full path for the file's name, ReDOS uses that file. If you specify a filename but no directory, ReDOS looks first in your current directory and then in the directory in which the PCKKEY program is found (usually \PCKWIK). If you don't specify a filename with /F, ReDOS looks for a file named REDOS.FIL.

This file consists of a series of commands, one to a line, each followed by an <Enter>.

Saving Conventional Memory

The Keyboard Accelerator automatically saves conventional memory in two ways. First, instead of allocating a separate block of memory for the ReDOS command list, it shares the memory which has been set aside for the Disk Accelerator's disk cache, up to the maximum you specify for the size of the command list. So you don't need to allocate extra memory to accommodate the command list. Second, if your hardware and software configuration support it, the Keyboard Accelerator moves its program code to either Upper Memory Blocks (UMBs) or expanded memory, freeing up even more conventional memory for your other applications. The Keyboard Accelerator examines your system and determines the best place to put the program code so that you automatically save as much conventional memory as possible. For details on what hardware and software you need to support this feature, see Appendix J. You can control the code placement using the /& parameter.

If you want to free up conventional memory and your system does not support moving code to UMBs or expanded memory, you can turn off some of the features of the Keyboard Accelerator, particularly ReDOS. Use the /M- parameter to turn off ReDOS.

The Keyboard Accelerator and Other Software

Windows Environment

Microsoft Windows generally takes over all keyboard functions so the Keyboard Accelerator has no opportunity to work. This also applies to most applications running under Windows, although non-Windows applications running under Windows may be able to use the Keyboard Accelerator. If you wish, you can leave the Keyboard Accelerator loaded to serve its function when you are using applications outside the Windows environment. Or, you can

unload the Keyboard Accelerator just before entering Windows and reload it after exiting Windows.

Compatibility Issues

The most common compatibility issue occurs with application programs which take their input directly from the keyboard instead of using DOS. In this case, the Keyboard Accelerator has no effect at all, as it has no opportunity to see the characters. Several programs allow you the option of changing the way they take their characters. For example, with dBase III, you must disable the dBase typeahead buffer by using SET TYPEAHEAD=0 for the Keyboard Accelerator to work.

Non-English-Language Keyboards

If you use a keyboard for a non-English language, the Keyboard Accelerator's hot keys may conflict with the key combinations used to produce certain characters. The conflict occurs only on keys that have three or four characters assigned to them. For example, on the German enhanced keyboard, one key can produce ß, ? or \. Often the third or fourth character is selected by using the right <Alt> key on the foreign enhanced keyboard.

Because the Keyboard Accelerator uses <Alt> and <Alt><Ctrl> combinations to define hot keys, an attempt to select the third or fourth character on a particular key may be misinterpreted as a hot key. This problem can be eliminated in either of two ways:

1. Disable the Keyboard Accelerator's hot-key processing by using /K- in the PCKKEY command that loads the program.
2. Request a special, non-English hot-key mode by using /K#. In this mode, the left <Alt> key on enhanced keyboards must be used (either alone or with <Ctrl>) to activate a particular

hot key. In addition, only keys from the numeric key pad should be used with the left <Alt> key to request a hot-key. This applies to *all* of the Keyboard Accelerator's hot-keys. The keyboard does not need to be in NumLock mode when numeric keys are used to select a hot-key combination.

You can change back to English-language mode by pressing <Alt><Ctrl><F1> and return to non-English mode by pressing <Alt><Ctrl><F2>. The Keyboard Accelerator automatically detects these changes and switches to the appropriate hot-key mode if /K# is specified when the Keyboard Accelerator is loaded. The Keyboard Accelerator always starts in non-English mode when you use /K#. If you previously had the keyboard translator in English mode with <Alt><Ctrl><F1>, just press <Alt><Ctrl><F1> again after you load the Keyboard Accelerator.

Note: Regardless of whether the foreign hot-key mode is used, the Keyboard Accelerator must be loaded after the foreign keyboard translation program rather than before it.

Appendix C

ADVANCED USE OF THE SCREEN ACCELERATOR

Introduction

This appendix covers advanced uses of the Screen Accelerator, including the advanced parameters, ways to save conventional memory, using the Screen Accelerator with different software applications and with different hardware configurations.

Advanced Parameters

These parameters control the functions discussed in this appendix. For basic parameters you are likely to use more often, see Section 6. A + indicates the option is turned on and a - indicates it is turned off. The default, unless otherwise specified, is +. The colon is optional unless otherwise specified.

/&*x* Choose which type of memory to load the Screen Accelerator code into. Choosing upper memory or expanded memory reduces the use of conventional memory, which is limited to 640K bytes. *X* is one of:

- U Upper memory (640-1024K bytes)
- A Expanded memory (conforming to LIM 3.2 or above)
- C Conventional memory (0-640K bytes)

If you use /&U- or /&A-, you can prevent the Screen Accelerator's program code from loading into upper memory or expanded memory.

Default: Determined by the Screen Accelerator. First, it checks whether an XMS driver is installed. If one is, and upper memory is available, the default is /&U. If no XMS driver is installed, but an expanded memory manager is installed, Super is using expanded memory, and expanded memory is available, the default is /&A. Otherwise, the default is /&C.

/C:*name* Specify the name of a program that is compatible with Advanced mode. You do not need to specify the extension (.EXE or .COM).

This command must be present each time the Screen Accelerator is loaded to identify all compatible programs, with one /C: parameter for each file name. This parameter can also be used after the Screen Accelerator has been loaded to add program names to the list. If you attempt to add a name already on the list, or if the list is full, you get an error message. There is a maximum of 30 compatible file names; 11 are predefined and you can specify up to 19 more. If you want to change the list of user-defined compatible files, you must unload the Screen Accelerator and reload with the new list of files.

Default: The predefined files are CHKDSK, COMP, FIND, MORE, TREE, PCKKEY, PCKSCRN, PCKSPL, PCKMAP, XCOPY, SUPERPCK.

/C* Display the list of compatible file names (maximum of 30), including the default list which is always used by the Screen Accelerator.

/Q+ Use quick option for CGA adapter because snow is not a problem.

Default: /Q+ for all non-CGA adapters, /Q- for CGA adapters

/X+ Use standard ANSI driver. /X1, /X2 select alternate ANSI drivers (see below).

Default: /X+ if an ANSI driver is detected; /X- if no driver is detected

Saving Conventional Memory

The Screen Accelerator automatically saves conventional memory in two ways. First, instead of allocating a separate block of memory for ReView's buffer, it shares the memory which has been set aside for the Disk Accelerator's disk cache, up to the maximum you specify for the size of the ReView buffer. So you don't need to allocate extra memory to accommodate the buffer.

Second, if your hardware and software configuration support it, the Screen Accelerator moves its program code to either Upper Memory Blocks (UMBs) or expanded memory, freeing up even more conventional memory for your other applications. The Screen Accelerator examines your system and determines the best place to put the program code so that you automatically save as much conventional memory as possible. For details on what hardware and software you need to support this feature, see Appendix J. You can control the code placement using the /& parameter.

If you want to free up conventional memory and your system does not support moving code to UMBs or expanded memory, you can turn off some of the features when you load the Screen Accelerator. /R- turns off ReView and saves some conventional memory. To save more, add /B- to turn off screen blanking, and finally /A-, to turn off the code for Advanced mode.

Application Compatibility

Because of the techniques used in Advanced mode, some application programs which write directly to the video screen without using standard DOS or BIOS system functions may appear to be incompatible. This results in garbled output or no screen output at all. Resident programs which pop up a video display without using any BIOS calls can also cause problems. Generally, applications do not have problems on standard monochrome or Hercules adapters, or on color adapters when running in Generic mode.

The Screen Accelerator adjusts itself whenever it can to avoid these situations. However, when programs begin writing directly to the screen without first accessing the BIOS, the display may become garbled.

Compatible Files

If some of your applications are not scrolling as fast as the DOS command displays, the Screen Accelerator may be handling them in Generic mode. If the program uses standard DOS or BIOS calls to write to the screen, it is compatible with Advanced mode. You can indicate that they are compatible with Advanced mode by using the /C:*name* parameter.

Use this parameter each time the Screen Accelerator is loaded to identify all compatible programs, with one /C: parameter for each

file name. You can also use it after the Screen Accelerator has been loaded to add program names to the list.

Use /C:* to list the programs which are compatible. The screen looks like this:

```
PC-Kwik (R) Screen Accelerator, Version xxxx
Copyright 1986-1991 Multisoft Corporation, All Rights Reserved.
 /C* The following names are on the list of compatible files:

 CHKDSK  COMP    FIND   MORE   TREE    XCOPY  PCKKEY    PCKSCRN
 PCKSPL   SUPERPCK  PCKMAP

The Screen Accelerator is Enabled.              Type "PCKSCRN /?" for help.
```

Correcting Incompatibilities

Fortunately, the Screen Accelerator is good at avoiding complications, but they occasionally occur with certain programs. If the program you are running is not on the compatible file list, the Screen Accelerator usually switches to Generic mode automatically and switches back when your application is done running. But if you get garbled output, the Screen Accelerator may still be running in Advanced mode even though your program is not compatible.

If you don't want to run in Generic mode all the time, you might set up a batch job to use Generic mode just for running a particular file, and go back to Advanced mode when it is finished. Create a batch file that looks like this:

```
PCKSCRN /A-
```

program
PCKSCRN /A+

If undesirable screen displays only occur when you return to DOS from one of your applications, you may be able to restore the proper display by pressing <Enter>; the DOS CLS (clear screen) command also works, even if you cannot see any of the characters echoed to the screen as you type.

If nothing else is working, try loading in Generic mode; use the /A- parameter when you load the Screen Accelerator. You can also disable the Screen Accelerator before running a program, although this is seldom necessary.

See the SCRNREAD.ME file on the distribution diskette for the latest information on programs which may have compatibility problems.

Using the Screen Accelerator With DESQview

Obtaining the benefits of the Screen Accelerator while using Quarterdeck's DESQview environment requires special steps. DESQview normally takes over all video functions so the Screen Accelerator does not have an opportunity to work. In addition, the way DESQview manages its screens and its pop-up window is not compatible with the Screen Accelerator's Advanced mode.

Always load the Screen Accelerator before you load DESQView, and do not load it from a DESQview window. The Screen Accelerator operates in Generic mode if you have each DESQview window take up the entire screen, and if you tell DESQview that the window "Writes directly to the screen". You do this in the "Change a Window" menu of DESQview. When using BigDOS or D1, the cursor may not return to the normal position when you

exit a program. However, as soon as you type something, the cursor returns to its normal position. With some video cards, when the screen unblanks the background color is not always restored to the proper color.

Note: On 80386-based systems, DESQview version 2.1 provides three choices for the "Writes directly to the screen" option: Y, N, and !. Only the ! choice allows the Screen Accelerator to speed up your screen. When using DESQview version 2.2, set "Write text directly to screen" to YES and "Virtualize Text and Graphics" to NO.

Screen Blanking With Mouse Movement

The screen blanking feature waits for a specified amount of time with no keyboard activity before it blanks the screen. It also attempts to detect movement of any mouse in use on your system. It treats mouse motion in the same way as keyboard activity, resetting the screen blanking timer.

Certain environments, such as Quarterdeck's DESQview, take over the mouse directly. The Screen Accelerator cannot detect that the mouse has been moved and so the screen may blank unexpectedly. In these cases you may want to occasionally press the <Shift> key to let the screen blanking feature know that you are actively using your system, or you may wish to turn off screen blanking when you are using one of these environments.

Controlling Flicker and Snow with CGA Adapters

If your system contains an IBM CGA color adapter, you may have already had to deal with the problems of a flickering screen, or "snow" on the screen. The Screen Accelerator automatically eliminates these problems when running in Advanced mode to give

you a faster and easier-to-read screen display. If you use Generic mode on a CGA adapter you might still see the flicker.

Note: If you already have a program to eliminate the flicker or snow, you should not use it at the same time you use the Screen Accelerator.

If you have a CGA adapter which has never had a problem with flicker, such as a Compaq CGA adapter, then you can get faster screen displays by telling the Screen Accelerator to operate as fast as possible. Use the /Q+ parameter when loading. Because that is the default setting on all non-CGA adapters, there is no need to worry about it if you have a monochrome, EGA, or VGA system.

If you have a monochrome monitor connected to a CGA-type adapter you can often improve the Screen Accelerator's speed by having the CGA-type adapter use a special CGA-monochrome video mode. (Examples of this special case are the Compaq Portable and many Cordata computers.) You can change to this special mode with the DOS MODE command by typing:

```
MODE BW80
```

Do this before loading the Screen Accelerator.

Unfortunately, some of your application programs may not properly detect this video mode, and may attempt to output colors to your monochrome screen; the results may be undesirable blinking, lack of contrast, or reverse video in the wrong places. If this happens, you can return to normal monochrome mode by entering:

```
MODE MONOCHROME
```

or

```
MODE MONO
```

Using Laptop Computers

Some laptop computers use a CGA-type adapter even though the screen appears to be monochrome. If you use a laptop, try loading the Screen Accelerator with the /Q (Quick) parameter to see if it improves performance. In some cases, the display speed may be increased by up 2 or 3 times by using /Q+.

Detecting ANSI.SYS

Normally, the Screen Accelerator automatically detects whether your system includes an ANSI driver. Some drivers and resident programs, however, can affect the ability of the Screen Accelerator to correctly detect an ANSI driver. If you are using an ANSI driver and the Screen Accelerator is not able to detect it, then it does not speed up your screen display. Also, the ReView feature does not capture data scrolled off the screen.

If you have installed an ANSI driver by placing the appropriate DEVICE= line in your CONFIG.SYS file and rebooting, check to see that the Screen Accelerator has detected the driver. If the ANSI driver has been detected, a line beginning with /X+ displays when the Screen Accelerator is loaded. If /X- is displayed instead, add /X+ (or /X1 or /X2, see below) to the PCKSCRN command used to load the Screen Accelerator.

Alternate ANSI drivers

There are several public domain and commercial ANSI drivers which can be used instead of the ANSI.SYS driver provided with DOS. If you experience difficulties when using one of these pro-

grams, consider adding one of the following parameters to the PCKSCRN command:

/X1 for NANSI.SYS, NANSI286.SYS, and similar drivers
/X2 for ZANSI.SYS and similar drivers
/X- for FANSI.SYS

You should not need to use these parameters if you use the ANSI-.SYS driver provided with DOS.

Appendix D

ADVANCED USE OF THE PRINT SPOOLER

Introduction

This appendix documents the advanced features and options of the Print Spooler. Advanced command line parameters are discussed first. Other sections cover controlling the amount of conventional memory the Spooler uses, using and configuring the pop-up menus, using single-sheet printing, spooling two printers at once, using a serial printer instead of a parallel printer, and using the Spooler with other software.

Advanced Parameters

The following parameters control the advanced features of the Print Spooler. Parameters for basic features are listed in Section 7. For all parameters, a + indicates the feature is turned on and a - indicates it is turned off. The default is + unless otherwise specified. The colon is optional unless otherwise specified.

/&*x* Choose which type of memory to load the Spooler code into. Choosing upper memory or expanded memory reduces the use of conventional memory, which is limited to 640K bytes. *X* is one of:

- U Upper memory (640-1024K bytes)
- A Expanded memory (conforming to the LIM 3.2 or above)

C Conventional memory (to 640K bytes)

If you use /&U- or /&A-, you can prevent the Screen Accelerator's program code from loading into upper memory or expanded memory.

Default: Determined by the Spooler. First, it checks whether an XMS driver is installed. If one is, and upper memory is available, the default is /&U. If no XMS driver is installed, but an expanded memory manager is installed, Super PC-Kwik is in expanded memory, and expanded memory is available, the default is /&A. Otherwise, the default is /&C.

/AC:*x* Redefine the hot-key combination as <Alt><Ctrl>*x*, where *x* is any single alphanumeric character.
Default: <Alt><Shift><PrintScrn>

/AS:*x* Redefine the hot-key combination as <Alt><Shift>*x* where *x* is any single alphanumeric character.
Default: <Alt><Shift><PrintScrn>

/BP:*nnn* Turn on Auto Page-Break mode for pages of *nnn* lines when loading. The default page length is 66 lines, the minimum is 4 lines, and the maximum is 255 lines. You may also change pagination modes from the pop-up window.
Default: No special pagination mode

/BS:*nnn* Turn on Single-Sheet mode for pages of *nnn* lines when loading. The default page length is 66 lines, the minimum is 4 lines, and the maximum is 255 lines. You may also change pagination modes from the pop-up window.
Default: No special pagination mode

/G# Handle the Spooler pop-up box differently for certain VGA systems because of a bug in the VGA BIOS.
Default: Handle VGA normally

/H+ Use a keyboard monitor that watches for the hot-key combinations. If /H- is specified, the default is to use both <Shift><Shift><PrintScrn> and <Shift><CapsLock><PrintScrn>. This avoids conflicts with programs such as Microsoft Windows which take over the keyboard entirely. /H- has no effect if used with /K-.
Default: /H+ (allow custom hot-key)

/J+ Output to the printer through the BIOS rather than directly. This allows other resident programs to process spooled output if they are loaded *before* the spooler. You *must* use /J+ if you are spooling to a network printer. Note that turning on this option turns on /N unless you explicitly specify otherwise.
Default: /J- (output directly)

/L# Disable use of parallel interrupts to a parallel printer. If parallel interrupts are not available on your computer, the Spooler detects this and does not use them. If you have unusual problems with your printer, you may wish to try this parameter. If you are setting up a second spooler on LPT*n* without parallel interrupts, use /L#*n* instead of /L:*n*. Note that Output Rate (/O:*n*) and Timeout values (/T:*n*) are only effective when parallel interrupts are disabled.

/N+ Enable DOS idle for increased Spooler performance. This is particularly effective when you have chosen /J+,

and choosing /J+ turns on this option. If you have problems with your Spooler when you use /J+, you may wish to explicitly specify /N-.
Default: /N- (disable DOS idle), unless /J+ is chosen.

/O:*n* Select the output rate to the printer where *n* is a number from 0 to 9, and 9 is the fastest output rate.
Default: /O:1 (normal output rate)

/Q+ Query before sending control characters to the printer with the Insert option.
Default: /Q+ (ask permission)

/T:*nn* Select the timeout value for printers where *n* is a number from 0 to 99, and 0 is the shortest timeout value.
Default: /T:1

/V+ Use the standard color combination for the pop-up video display. /V- selects the alternate colors: normal video for monochrome and black on green for color.
Default: /V+ use reverse video for monochrome monitors or blue on cyan for color monitors.

/VB Specify the pop-up video display color to be reverse monochrome even if you have a color monitor (black and white mode). For monochrome, this is the same as the default.
Default: See /V+

/W+ Warning messages from the printer pop up. Use /W- to suppress these warnings. When /W- is used, the pop-up menu box can still be used to find out why printing has stopped. To suppress only the timeout warning mes-

sages, which are characteristic of laser printers and can be annoying, use /W#.
Default: /W+

/X:*rr,cc* Specify the position of the pop-up window on the screen, where *rr* is the top row number (0 to 17) and *cc* is the first column number (0 to 40).
Default: /X:0,0 (the display window is in the upper left corner of the screen)

/Z+ Enable compression during spooling. Normally compression reduces the amount of space required to hold a document in memory during spooling. In some cases you may want to disable compression using /Z-, for instance, if your word processor downloads soft fonts or Postscript files to a laser printer.
Default: /Z+ (compression enabled)

/? Display a summary of these parameters.

Reducing Use of Conventional Memory

You can reduce your use of conventional memory by either disabling some memory-resident features of the Spooler or by specifying that the code for the Spooler reside in upper memory or in expanded memory. The Print Spooler is designed to automatically save as much conventional memory as possible. It does this by sharing the memory allocated to the cache and by moving some or all of its program code out of conventional memory when it is possible.

Note: The amount of conventional memory you use relates only to the amount of memory used by the program code. Because the

Spooler shares the memory allocated to the disk cache, it requires no additional conventional memory for the printer data it spools.

Disabling Features to Save Memory

Several of the features of the Spooler may be disabled at run time. Unless they are specifically disabled, all Spooler features discussed below are enabled, except support for serial printers. Disabling these features can reduce the amount of memory the Spooler uses:

/K	Support for hot-key pop-up box

or

/I	Insert string and Modify functions
/G	Graphics pop-up displays
/H	Configurable hot-key monitor

The /K- parameter always removes all program code associated with the hot-key pop-up box. All of the other configurable features, except /C, pertain to the hot-key, and using /K- overrides any of them. Using /K- provides the largest savings in memory size.

If you don't use /K-, you can disable individual hot-key features using /I-, /G- and /H-, in exactly that order. Because of the way the Spooler loads, disabling graphics or the hot-key monitor without disabling the Insert Strings feature saves no memory. If you turn off all hot key support, the Spooler takes up only about 9K bytes of memory.

Note that even if you turn off the hot-key pop-up box, you still have full control of the Spooler from the DOS command line. Typing PCKSPL at the DOS prompt always brings up the pop-up

box. You simply lose the ability to call up the Spooler from within another program.

Moving Program Code to Save Memory

The Print Spooler automatically checks your system and detects what memory and software are available. It automatically configures itself to save as much conventional memory as is possible on your particular machine. You need not set any parameters or do anything special. You can, if you like, explicitly specify that the code for the Spooler reside in Upper Memory Blocks (UMBs) or in expanded memory.

For the Spooler code to move to the UMBs, you must have the memory available and have a memory manager which can access it. Use the /&U parameter to specify moving code to UMBs.

To explicitly specify that the code reside in expanded memory, you must have expanded memory available, Super PC-Kwik must be running in expanded memory, and an expanded memory manager conforming to LIM 3.2 or above. Use the /&A parameter to specify moving code to expanded memory.

It is usually best to let the Spooler software detect which kinds of memory are available and automatically reduce the amount of conventional memory used. For more details about how this feature works and what system configurations are necessary, see Appendix J *Using Upper Memory Blocks or Expanded Memory for Program Code.*

Providing the Largest Possible Spooler Buffer

Super PC-Kwik dynamically shares its cache memory among the Power Pak programs; the Spooler's data buffer area is shared with the Disk Accelerator. If the amount of data that you can spool is a major consideration, there are several things you can do to maximize it by making as much of the disk cache buffer available as possible:

1. Eliminate Power Pak's RAM Disk; remove the command from your CONFIG.SYS file. Or limit its maximum size to the smallest size you need. We generally recommend not using the RAM Disk if Spooler space is critical; Super PC-Kwik makes accessing your hard disk files faster anyway.

2. Lower the amount of memory the Screen and Keyboard Accelerators can borrow from Super PC-Kwik. For instance, use these parameters:

```
PCKSCRN /S:4
PCKKEY /Z:1
```

3. Eliminate any sharing of the disk cache buffer memory and provide the maximum Spooler data memory storage by eliminating the ReDOS and ReView features. Use these parameters:

```
PCKSCRN /R-
PCKKEY /M-
```

The Pop-Up Menus

Introduction

You control the Print Spooler through the pop-up menu boxes. If you have enabled the hot key, the menus pop up when you press the hot-key combination. Whether you have enabled the hot-key pop ups or not, you can always access the pop-up boxes from the DOS prompt. This section discusses accessing the pop ups and describes how to control the Print Spooler with the pop-up menus.

Not all of the main menu options appear on the pop-up prompt line at the same time. For example, if no data is spooled, the Flush and Suspend options are not displayed because they are only valid when printing. The main menu command options are discussed below.

When you press the hot-key combination or you type PCKSPL at the DOS prompt, the pop-up display appears on the screen and may be manipulated as described below. When you choose Resume or Suspend, the window disappears. If you invoked the menu from the DOS prompt, the Spooler displays a message informing you of the current hot-key combination.

To choose an option in any menu, move the highlight bar over the option you want and press <Enter>. The arrow keys move the highlight bar. A Reminder line always gives you a description of the option you have highlighted. <Esc> always exits the current menu: if you are in a sub-menu, you pop up to the main menu; if you are at the main menu, you exit the pop-up menus entirely.

Main Menu - No Data Spooled

Here is the pop-up display when there is no data spooled:

```
PC-Kwik Print Spooler.  Ver. xxxx      Notes:
     ** NO DATA SPOOLED **          <- Header
LPT1:      0 K bytes spooled.       <- Status
      xx,xxx K bytes available.     <- Memory info
Resume  Modify  Insert  Disable     <-   "
==> Exit and resume spooling.       <- Prompt
                                    <- Reminder
```

Each of the options from this menu and any sub-menus are described in this section.

Resume:

If you select the Resume option, the pop-up box disappears from the screen, and control returns to the interrupted program. Pressing <Esc> in the main menu is equivalent to Resume, as long as no data is spooled.

Modify:

The Modify option offers a set of related functions which allow you to change some of the features of the Print Spooler. These include Automatic Pagination functions and the ability to modify the output rate.

This function is optional in the resident hot-key pop-up window. By default, it is included whenever you have a pop-up display. If you do not need to modify the output rate or Pagination options *while other programs are running,* you may save memory by using the /I- parameter.

The Modify Sub-Menu

If you select the Modify option, a new set of options appears on the prompt line:

```
PC-Kwik Print Spooler.  Ver. xxxx
     ** NO DATA SPOOLED **
LPT1:      0 K bytes spooled.
      xx,xxx K bytes available.
Quit            Paging  OutRate
==> Return to the main menu choices.
```

Quit:

The Quit option returns you to the main menu. You may also return to the main menu by pressing <Esc>.

Paging:

The Paging option allows you to choose Single-Sheet or Automatic Page-Break mode, and to modify the page length used in these modes. (There is an explanation of the paging modes on page 188.)

Warning: If you attempt to print graphics images while in Single-Sheet or Auto Page-Break mode, the printer output may be garbled. Be sure to change to Normal mode before attempting to print any graphics.

Selecting the Paging option causes the reminder line to be redrawn to show you the current paging mode:

```
PC-Kwik Print Spooler.  Ver. xxxx
     ** NO DATA SPOOLED **
LPT1:      0 K bytes spooled.
       xx,xxx K bytes available.
Quit             Paging  OutRate
Paging Mode =     Normal      <space>
```

The highlighted box shows the current paging mode. By using the space bar, tab, or backspace keys, you can change the mode which appears in the highlighted box. The display cycles among Normal, Single-Sheet, and Auto Page-Break. Select the displayed mode by pressing the <Enter> key. Abort without making any changes by pressing <Esc>.

If you select Single-Sheet or Auto Page-Break mode, the bottom line shows you the current page length in decimal lines per page. If the page length is correct, select it by pressing the <Enter> key. The default length is 66 lines per page, the normal length of standard paper using standard print sizes.

You may change the page length by entering the correct number of lines per page. Enter decimal digits to a maximum of 255 lines and press <Enter>. Pressing <Esc> returns you to the Modify menu with the page length unchanged, even if you typed in new numbers. Pressing <Esc> while selecting page length has no effect on Paging mode.

OutRate:

The OutRate option allows you to change the maximum rate at which the Spooler can output characters to your printer if you have disabled parallel interrupts with /L#.

Selecting OutRate from the Modify menu shows you the current output rate number; 0 is lowest output rate and 9 is the highest.

```
PC-Kwik Print Spooler.  Ver. xxxx
     ** NO DATA SPOOLED **
LPT1:       0 K bytes spooled.
       xx,xxx K bytes available.
Quit              Paging  OutRate
Output Rate = 1 <Space>,<Enter>,<Esc>
```

By pressing the space bar or up arrow, you can increment the number. As the number increases, so does the pitch of the tone you hear. After reaching 9, the rate starts over again at 0. Pressing <Backspace> or the down arrow causes the number to decrease. The numeric keys on the top of the keyboard can also be used to type in a number.

To modify the output rate, you must press <Enter>. Pressing <Esc> returns you to the Modify menu without changing the output rate, even if you changed the number shown in the display.

Insert:

The Insert option offers a set of related functions which allow you to send control characters to the printer.

The Insert Sub-Menu

If you select the Insert option, a new set of options appears on the prompt line. This display is the Insert sub-menu:

```
PC-Kwik Print Spooler.  Ver. xxxx
     ** NO DATA SPOOLED **
LPT1:       0 K bytes spooled.
       xx,xxx K bytes available.
Quit   FormFd LineFd Reset  String
==> Return to the main menu choices.
```

Each of the options, except Quit, allows you to send control characters to the printer. In each case, the Spooler asks you to verify your request before it actually sends the characters to the printer. This avoids sending characters by mistake. If your printer is not properly accepting characters, the Spooler pauses and aborts the insertion.

If you prefer not to be asked for permission each time you insert control characters, you may turn off this query feature with the /Q- option when starting the Spooler. /Q- does not suppress queries for the Reset option.

Quit:

The Quit option or <Esc> returns you to the main menu.

FormFd:

FormFd sends a Form Feed or New Page character directly to the printer if no data is currently spooled. If data is currently spooled, the Form Feed is added to the end of the spooled data.

LineFd:

LineFd sends a Line Feed or New Line character directly to the printer if no data is currently spooled. If data is currently spooled, the Line Feed is added to the end of the spooled data.

Reset:

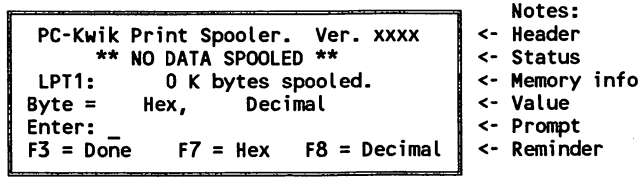
If you select Reset, you are asked if you want to reset the printer. If you select Y, a reset signal is immediately sent to the printer. If you select N, the Reset function is canceled.

String:

Insert String allows you to send escape sequences of printer control characters to a printer. Since printers differ, you need to be familiar with the control characters your printer requires.

The presence of this function in the resident hot-key pop-up window is optional. By default, it is included whenever you have a pop-up display. If you do not need to send escape sequences to the printer *while other programs are running*, you may save memory space by suppressing this option with the /I- parameter.

Selecting String causes the display to change to:



You enter characters to be sent on the prompt line. Almost all keyboard characters may be typed directly into the string, including <Esc>, <Enter>, and any <Ctrl> key combinations. Terminate the string by pressing <F3> or by pressing <Ctrl>-<Enter>.

As each character is typed, it is displayed on the prompt line. While letters and numbers look normal, some special keys and <Ctrl> key combinations are printed in the standard graphic interpretation of their numeric values. A few characters are displayed only as an empty space.

To help in reading the characters, the Spooler uses the line above the string to display the hexadecimal and decimal values of one character in the string. The displayed value corresponds to the highlighted character on the prompt line. If the character has a special meaning, this meaning is also displayed on the same line, such as <Esc> for the Escape key or Ctrl-*x* for control characters.

```
 PC-Kwik Print Spooler.  Ver. xxxx
      ** NO DATA SPOOLED **
 LPT1:       0 K bytes spooled.
Byte = 18 Hex,  24 Decimal   Ctrl-X
Enter: ABC↑
F3 = Done    F7 = Hex    F8 = Decimal
```

The only valid keys which cannot be entered directly into the string are <Backspace> and <Ctrl><Enter>. <Backspace> erases characters from the string. <Ctrl><Enter> and <F3> terminate the string and continue.

When you press <Enter>, two characters appear on the line. The Spooler automatically has inserted both a Carriage Return character and a Line Feed character in response to the <Enter> key. If you want only a Carriage Return, you may erase the Line Feed by using <Backspace>.

Not all key combinations result in valid printer characters. If you type an invalid character, a beep sounds and the string remains unchanged.

Editing a String
The blinking cursor on the prompt line marks the position of the next input character. You may use the left and right arrow keys to move the cursor back and forth in the string.

One character in the string is always highlighted in reverse; this character's values are displayed on the Value line.

The first time you press the <←> key, the blinking cursor moves left, under the highlighted character at the end of the string. If you press the <←> key again, the blinking cursor and the highlight move together down the string. The value line always shows the values for the character which is highlighted.

When you insert a character, it goes into the string location indicated by the cursor. If the cursor is under an existing character, the new character *replaces* the existing character in the string, and the cursor moves to the right.

You may delete characters from the string by using <Del> and <Backspace>. <Del> deletes the character *at* the cursor. <Backspace> deletes the character to the *left* of the cursor.

Using Hexadecimal and Decimal Entry Modes
Many values used in printer control escape sequences are not keyboard characters, but are absolute numbers. It is easier to enter the number itself, rather than find the keyboard combination which results in that number. The Insert String function provides two ways for you to use numbers: as hexadecimal or decimal values.

Any time you are entering characters into the string, you can change to Hexadecimal Entry mode by pressing <F7> or <Alt>H. When you do this, a new display appears on the Reminder (bottom) line:

```
 PC-Kwik Print Spooler.  Ver. xxxx
      ** NO DATA SPOOLED **
 LPT1:       0 K bytes spooled.
Byte =    Hex,     Decimal
Enter:
<Enter> to terminate. Enter Hex:___
```

While the current string is still visible on the prompt line, you may now enter a two-digit hexadecimal value using 0 through 9, A, B, C, D, E, and F. As you enter the characters, the digits appear after the words Enter Hex: on the reminder line.

If you enter more than two digits, the digits entered earlier roll off the left end of the number. If you enter a character which is not a hexadecimal digit, the digits are cleared and you must start entering the number again.

When you have the correct two-digit hexadecimal number displayed on the reminder line, press <Enter> to send the value to the string on the prompt line. If there are no numbers displayed after Enter Hex:, then no character is inserted

into the string. In either case, you exit Hexadecimal mode and return to the string on the prompt line.

If you press <Esc>, <F7>, or <Alt>H while already in Hexadecimal mode, you return to the original Insert String menu without changing the string, regardless of whether you have typed in any digits.

Decimal Entry mode works in the same manner as Hexadecimal Entry mode, except that you enter Decimal mode by pressing <F8> or <Alt>D. You may enter up to three decimal digits, but their value cannot be greater than 255. A decimal value over 255 is treated as an invalid character.

Sending a String to the Printer
When you press <F3> or <Ctrl><Enter> while one or more characters are in the string on the prompt line, the Spooler asks you if you want to send the string to the printer. If you indicate N, the string is discarded and control returns to the Insert menu.

If you press the <Esc> key, you return to editing the same string without sending it to the printer.

If you type Y, all the characters in the string are sent directly to the printer, unless data is currently spooled. If data is spooled, the characters are sent at the end of the current page. Control returns to the Insert menu.

No extra Carriage Return or Line Feed characters are added to the end of the string. Usually you see no response from the printer, even if you sent some text characters, unless you have added a Carriage Return or Line Feed to the string.

If the string is empty when you press <F3> or <Ctrl><Enter>, control returns immediately to the Insert menu.

You can instruct the Spooler not to ask you for verification by placing the /Q- parameter in the load command line.

Disable:

Selecting the Disable option disables the Spooler, causing it to pass all printer data through to the previous printer handler. Printing occurs as it did before the Spooler was loaded.

There are a few cases when you may want to disable the print spooling function temporarily.

1. You want to use a word processor which has its own print spooling function built in.
2. The Spooler might be incompatible with some other programs which print to the printer.

When no data is spooled, the Disable option appears on the main prompt line. The Disable option is not available while data is spooled; you must first use the Flush option to flush the Spooler memory.

After disabling the Spooler, the hot-key remains active. However, you have only two options available, as the prompt line shows: Resume and Enable. After you Disable the Spooler, Enable takes the place of Disable on the menu. Modify and Insert are no longer shown. You may choose to enable the Spooler at any time with the Enable option, or leave it disabled by selecting Resume.

```
PC-Kwik Print Spooler.  Ver. xxxx
     ** SPOOLER DISABLED **
LPT1:       0 K bytes spooled.
       xx,xxx K bytes available.
Resume                    Enable
==> Re-enable the spooling utility.
```

Main Menu - Data Spooled

Here is the pop-up display when there is data spooled:

```
PC-Kwik Print Spooler.  Ver. xxxx
     ** PRINTING SUSPENDED **
LPT1: xx,xxx K bytes spooled.
       xx,xxx K bytes available.
Resume  Flush  Insert  Suspend
==> Exit and resume spooling.
```

Resume:

If you use the Resume option, the pop-up box disappears from the screen, and control returns to the interrupted program.

Flush:

If you use the Flush option, the Spooler discards any currently spooled print data and returns all of the memory it used for its buffer to the cache. If you need to restore the printer state after flushing, you should use the Insert Form Feed and Insert Reset commands.

Suspend:

The Suspend option allows you to stop printing temporarily while continuing with other programs. The Suspend option is available only if data is currently spooled or if you invoke the

Spooler from the command line with PCKSPL /S. Like Resume, if you choose Suspend the pop-up box disappears and control returns to the interrupted program. However, Suspend stops all printing while Resume does not. You may begin printing again from where the Spooler left off by using the hot key and selecting the Resume option, or by typing PCKSPL /R from the DOS prompt.

Note: The Suspend option does not stop the Spooler from accepting print data; it only stops sending it to the printer. Your programs can continue to run, even if they send data to the printer.

Note: Printers with internal buffers may not stop printing immediately when the Spooler stops sending them data.

Insert:

The Insert function with no data spooled is described starting on page 175. Using it while data is spooled is similar to using it with no data spooled, with a few exceptions.

When data is spooled, inserting Form Feed and Line Feed characters causes characters to be inserted at the end of the currently spooled data rather than being sent immediately to the printer.

If you select Reset, it asks if you want to reset the printer. If you select Y, a reset signal is *immediately* sent to the printer. If you select N it asks if you want to insert a "pause" at the end of the currently spooled data. A pause suspends printing when all data previous to the pause has been sent to the printer. A warning box appears on the screen, and printing re-

mains suspended until you use the hot key and select Resume or you type PCKSPL /R from the DOS command line.

The pause is useful if you need to change to a different kind of paper between print jobs. The pause is not available if there is no hot key, if there is no data spooled, or if the Spooler is in Single-Sheet mode.

When String is selected, and you finish editing a control string, the Spooler asks if you want to send the string to the printer. If you indicate Y, all the characters in the string are placed at the end of the currently spooled print data. No extra Carriage Return or Line Feed characters are added to the end of the string.

Invalid Entries

If you enter a character which does not correspond to any of the currently valid options, a beep sounds and no action is taken.

Detecting Errors

Occasionally your printer may not be able to print because it has run out of paper, has encountered some error, is not properly connected, or is not turned on. Should your printer fail to respond, the Spooler detects this, beeps, and displays a warning message on the screen for five seconds unless the /W- parameter was used to suppress these messages.

```
 PC-Kwik Print Spooler.  Ver. xxxx
** PRINTER ERROR = OUT OF PAPER  **
 LPT1: xx,xxx K bytes spooled.
       xx,xxx K bytes available.
 Fix printer or use Hot-Key for help
  Hot-Key = <Alt><Shift><PrtSc>
```

The Spooler attempts to decode the status information from the printer and identify OUT OF PAPER, OFFLINE, or I/O ERROR conditions. This feature is available only if the hot-key feature is enabled. No display occurs if you are running in a graphics video mode, the hot-key feature is disabled, or you specified /W- during loading. Instead, only a beep sounds.

With some laser printers, the TIMEOUT error flashes repeatedly, although there is nothing wrong with either the printer or the spooler. This can be annoying. If you would like to disable the TIMEOUT error but keep the other errors active, use the /W# parameter.

The Spooler continues trying to output to the printer. You may use the pop-up display to flush the print data, to reset the printer, or to see how much data is spooled, or you may need to correct the problem at the printer itself.

Detecting Full Spooler Memory

You may send more data to your printer than the Spooler can find memory to store. Unless you print a lot of large files, or the size of Super PC-Kwik's cache is relatively small, you may never encounter this situation.

When the Spooler runs out of memory for spooling, it automatically waits for memory to be freed up from printing data. Since

printing the data out is considerably slower than spooling it in, filling up the Spooler's memory results in a noticeably longer delay in returning control to you.

In this case, the Spooler displays a message on the screen to alert you to this condition. This is not an error, but simply an informational message.

```
  PC-Kwik Print Spooler.  Ver. xxxx
**MEMORY FULL. WAITING FOR PRINTER**
  LPT1: xx,xxx K bytes spooled.
             0 K bytes available.
  PLEASE WAIT OR USE HOT-KEY TO ABORT
   Hot-Key = <Alt><Shift><PrtSc>
```

Since control has not yet returned to you or your program, this message is left on the screen while the Spooler continues printing. When enough memory has become available to finish spooling all of the data, the message is removed from the screen and control returns to you.

The hot key may be used to flush the current printing buffer. The message displays to assure you that this is a normal delay and that the system is not malfunctioning. If you use the hot key, its display replaces that of the Memory Full message. If you exit from the hot-key display without flushing the spooled data, the Memory Full message reappears.

This feature is available only if the hot-key feature is enabled. No display occurs if your current program is running in a graphics video mode or if the hot-key feature is disabled. Instead, only a beep sounds.

Special Features

This section describes the following special features of the PC-Kwik Print Spooler:

- Using single-sheet printing or adding space between pages
- Changing the rate of output to the printer
- Changing the printer timeout value
- Spooling two printers at the same time

Pagination Modes

The PC-Kwik Print Spooler provides three ways to control paging. Single-Sheet mode allows you to print documents one sheet at a time, with a break in between to change paper. Auto Page-Break mode adds extra lines at the bottom of a page to avoid printing on the perforations between the sheets of continuous forms. Normal mode prints all data to the printer without worrying about pagination and works well for most printing situations.

You may change the pagination mode with the Modify Paging option of the pop-up menu. You may also select either pagination mode when you load from the DOS prompt or from a batch file using the /BP or /BS parameter.

For both Single-Sheet and Auto Page-Break modes:

1. If you attempt to print graphics images, output may be garbled. Be sure to change to Normal mode before printing any graphics.
2. The Spooler must know the correct number of lines on a page. This depends on the size of the paper you are using and on the print font.

3. The Spooler watches for Line Feed and Form Feed characters to determine when you have printed an entire page. If you reset the printer, by turning it off and on, for example, pagination does not work correctly. The line count is reset every time you enter an Insert Form Feed or Insert Reset command from the Insert menu. It is also reset each time you select a new mode with the Paging option of the Modify menu.

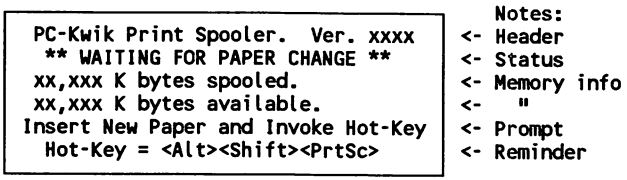
Single-Sheet Mode

Use this mode if you are printing text on non-continuous, single sheets of paper. The Spooler pauses after it has finished sending exactly one page of data to the printer. Resume printing by choosing Resume in the pop-up menu.

Single-sheet mode is not available if the hot-key feature is disabled with /K-. It is not necessary to use Single-Sheet mode with laser printers, which always handle paging independently.

Note: You may need adjust the page length spooled until it suits your printer. Many printers cannot print all 66 lines on a page. You may also have to disable the paper-out detector on your printer before doing single-sheet printing. Consult your printer documentation to see if your printer uses DIP switches or escape sequences to do this.

When the Spooler pauses between pages, it alerts you by displaying a video box similar to the hot-key pop-up display:



The bottom line reminds you of the Spooler's hot-key combination. This box remains on the screen for a few seconds and then disappears. The box does not appear if your screen is in a graphics mode; instead, a beep sounds.

First, make sure the printer has actually stopped printing. Insert a new sheet of paper and align the top of the page with the print head. Then invoke the Spooler's pop-up box with the hot key. The pop-up display shows:

** WAITING FOR PAPER CHANGE **

on the status line. To resume printing, select the Resume option by pressing <Enter>, R, or <Esc>. Or you can type PCKSPL /R from the DOS command line.

Many word processors have a single-sheet printing mode, too. The advantage of using the Spooler is that you can usually continue with other work while the Spooler takes care of printing the individual pages.

Note: Many new printers have their own buffers which can hold more than a full page of data. The Spooler is able to output one page of data into the printer's buffer long before the entire page has actually been printed out. In this case, the Spooler's message

may appear soon after a new page has started printing. Wait until the printer is finished printing before you insert a new sheet.

Auto Page-Break Mode

Auto Page-Break mode adds three extra lines at the end of each page to avoid printing on the perforations between the sheets of continuous forms. It is useful when printing unformatted text. Printing text which already has page breaks, while in Auto Page-Break mode, does not normally cause problems *unless* the page breaks occur in the last three lines of the page. Printing formatted documents with page numbers on the bottom may cause a problem. Most word processors already insert page breaks.

Note: Many printers also provide this feature. You may be able to tell your printer to avoid printing on the perforations by setting a switch or by issuing a special escape sequence of control characters to the printer. Consult your printer documentation for something like a "Skip Over Perforations" mode.

Output Rate

The output rate value tells the Spooler the maximum speed to use to send characters to your printer when you have disabled parallel interrupts with /L# or if your printer does not use parallel interrupts. The Spooler automatically detects whether your printer uses parallel interrupts or not, and uses them unless you specifically disable them. The output rate has little effect on printing speeds to serial printers under normal conditions and is generally of concern only when using a parallel printer.

The output rate value is relative, with 0 the lowest speed and 9 the highest. The default value is 1. You may change the output rate by using the Modify-OutRate option (see page 172). You may

also set the output rate when loading or modify it at any other time by using the /O:*n* parameter.

You may have to experiment with several different rates to see which ones work best with your particular system. Using the highest number is not always the best. The default value should work well for most printers.

Many older parallel printers require a delay between characters to prevent receiving characters faster than they can be processed. This may result in graphics output with random skewed lines. If this happens, use a smaller output rate number. This is not usually a problem when printing only text.

For average speed printers (under 300 characters per second) you may not notice any faster printing. The printer itself is the limiting factor. Changing the output rate does not necessarily produce a noticeable speed improvement.

The default rate of 1 is conservative enough to prevent problems on all printers. Using an output rate of 3 to 5 optimizes throughput on most dot-matrix printers, printing text only.

Printers which have their own large buffers may see a significant increase in output speed by using a larger output rate value. Values between 5 and 9 use no delays at all; use 6 to 9 for laser printers and other printers with very large buffers built in. The highest numbers are normally useful only if you are printing graphics with a laser printer.

One disadvantage to using a very high output rate with such printers is that, when printing large files, almost all of the computer's time may be used in passing data into the printer's buffers, and

you may see a noticeable delay in the response to your keyboard or other foreground programs.

The Timeout Value and Output Rate
Most printers can accept characters quite rapidly as long as their internal buffers are not full. However, a few parallel printers require longer to accept each character and appear to print significantly slower when the Spooler is loaded. If increasing the output rate does not improve the printer speed, you may want to try gradually increasing the timeout value by using the /T:*nn* parameter (see page 166). Setting the timeout value too high may make spooling and foreground processing noticeably slower.

Spooling Two Devices

The PC-Kwik Print Spooler supports spooling two different printing devices at the same time. You simply load the Print Spooler twice, with two different sets of parameters. You then have two resident copies of the Spooler, each with its own hot-key combination, or no hot key if you choose. Both Spoolers share memory with the Super PC-Kwik Disk Accelerator, and this cache memory is available to the Spoolers on a first-come, first-served basis.

When you load the second copy of the Spooler, it checks to make sure that the spooled device and the output device are different from the first Spooler. You must also specify a different hot-key combination from the first Spooler or no hot key at all.

The two Spoolers run independently, and each requires separate memory space for its program code. The actual memory areas used for storing print data are borrowed from the cache. As with one Spooler, no cache memory is used when you are not doing any printing.

Loading Two Spoolers
Setting up two Spoolers is easy. Invoke the Spooler twice, using a different device and hot key combination for each invocation. If either the hot keys are the same or the devices are the same, the second Spooler issues an error message and won't load. When the second Spooler is loaded you see a message telling you that you now have two Spoolers loaded. For instance, to spool two printers, one on LPT1 and one on COM1, type:

```
PCKSPL /L:2 /C:1 /AS:2
```

or

```
PCKSPL /C*:1 /AS:2
```

The first command loads a second spooler using <Alt><Shift>2 for the hot key and redirecting output from LPT2 to COM1. The second command, an alternate way of spooling to a COM port, spools directly to COM1 with no redirection and assumes your applications direct their printer output to COM1.

Using Two Spoolers
The hot-key pop-up box shows the name of the device it represents (LPT1, COM1, etc.) in the pop-up display box, so you can determine which hot-key is for which device. Using one hot-key combination temporarily suspends the printing only for its *own* device. The second device can continue spooling and printing in the background.

By default, all parameters you use while the Spoolers are running act on the *last Spooler loaded*. These parameters are /D, /E, /F, /IF, /IL, /IR, /M, /O:x, /P, /R, /S, /T:x, /U, and PCKSPL with no parameters at all. If you wish to have any of these commands (except /U) act

on the first Spooler loaded, add the /1 parameter to the command line. The /1 parameter has no effect on the /U (unload) command, because unloading the last program loaded is the only possible order for unloading in the DOS environment.

Serial Printers

Serial printers are always spooled indirectly, by redirecting to a serial port the data sent to a logical parallel device. You may already be using the DOS MODE command to redirect your printer output to the serial printer. If so, the command might be in your AUTOEXEC.BAT file (or another .BAT file) and would look something like this:

```
MODE LPT1:=COM1
```

To use the PC-Kwik Print Spooler for a serial printer, you must not use the MODE command to redirect output. Comment it out of any batch files in which it appears. Instead, let the Spooler to do the redirecting.

Using a Serial Printer

To use a serial printer with the Print Spooler, use this command:

```
PCKSPL /C:1
```

When you use /C:1, the Spooler redirects print data for LPT1 to the serial device COM1. Since LPT1 is the default value for the input device, you do not need to specify it. To redirect output to another COM port, use the port number; for COM2, use /C:2. To redirect the data for a parallel port other than LPT1, use the printer port number in the same way; for LPT2, use /L:2. You must explicitly specify any printer port other than LPT1. See the examples below.

Serial Characteristics

You may be using the MODE command to define the serial characteristics of your serial device. That command looks like this:

```
MODE COM1:9600,N,8,1,P
```

You may continue to use this command if you wish. However, you should omit the P parameter at the end, if you have one specified.

Alternatively, you may use the Spooler command to define these characteristics. For example, you may replace the following two commands:

```
MODE LPT2:=COM1
MODE COM1:9600,N,8,1,P
```

with the single PC-Kwik Print Spooler command:

```
PCKSPL /L:2 /C:1 B:9600 P:N D:8 S:1
```

Serial Characteristics Parameters

The DOS MODE command sets four serial protocol parameters: data length, baud rate, parity, and stop bits. (See your DOS reference manual for details.) You may use this command before or immediately after loading the Spooler. You can specify the four characteristics of your serial device, and whether to use the XON/XOFF serial protocol, when you load the spooler, if you prefer. If you are setting up serial characteristics with the MODE command, skip this section. Consult the documentation for your serial printer to determine the correct settings for the serial protocol parameters.

The /C parameter has five optional sub-parameters for defining these characteristics: B:, D:, P:, S:, and X:. Any one or more of the

five sub-parameters may be specified, in any order, immediately following the /C.

Note: Do not place a slash (/) before the sub-parameter letters. The Spooler interprets the slash as the beginning of a new major parameter. Each sub-parameter you specify must be followed by a value. Do not place commas or other delimiters (except a space) between sub-parameters.

Serial Characteristic Parameter Conventions

B:*nnnnn* Baud rate. *nnnnn* = 110, 150, 300, 600, 1200, 2400, 4800, 9600, or 19200 (*Note:* Many computers do not support 19,200 baud.) Default: 300

D:*n* Data length. *n* = 8 for 8-bit characters, 7 for 7-bit characters. Default: 7

P:*x* Parity. *x* = O for Odd, E for Even, or N for None. Default: E

S:*n* Stop bits. *n* = 1 or 2 stop bits. Default: 1

X:*x* Include support for the XON/XOFF serial protocol. *x* is one of:

- N for no XON/XOFF support
- Q for <Ctrl>Q as the only valid XON after an XOFF
- Y for any character as a valid XON after an XOFF

Use X:Q for most printers.

Default: N

If the /C parameter is used without any of the sub-parameters, the Spooler uses the serial device without attempting to initialize it. In this case, the current mode of the device is left unchanged. If you prefer to use the MODE command to set your serial device characteristics, do not use any sub-parameters after the /C.

If the /C parameter is used with only the X sub-parameter, the current mode of the device is left unchanged. The Spooler assumes you have used the MODE command to set serial characteristics.

If the /C parameter is used with any of the other sub-parameters, any unspecified parameters assume their default values.

Examples of Serial Parameters

Example 1: PCKSPL /C:2 B:2400

Meaning: Redirect printer output from the default input device LPT1 to the serial device connected to COM2. Use a baud rate of 2400 baud. By default, also use even parity, one stop bit, 7-bit characters, and no XON/XOFF support.

Example 2: PCKSPL /L:2 /C B:1200 D:8 S:1 P:N /V-

Meaning: Set up the Spooler to spool all data to LPT2 and to redirect the output to serial device COM1 (the default). The serial protocol uses 1200 baud, 8-bit characters, one stop bit, no parity, and no XON/XOFF support. Also, use the alternate color combination for the pop-up window. (Notice that the next major parameter is introduced with the leading slash.)

Here is the sign-on screen for the above command:

```
PC-Kwik(R)   Print Spooler, Version xxxx
Copyright 1987-1991  Multisoft Corporation, All Rights Reserved.

 Print Spooler is loaded and enabled.

 Following is a list of parameters in effect:

 /L:1   Spooling device LPT1: using parallel interrupt support on int 7.
 /N-    No Output during DOS idle & keyboard input.
 /&U    Spooler is loaded in High memory.
 /K+    Hot-Key support is enabled.
 /H+    Hot-key combination is: <Alt><Shift><PrtSc>
 /G+    Hot-key support in Graphics video modes.
 /I+    Insert-String and Modify options available in resident pop-up.
 /O:1   Printer Output rate factor = 1.
 /Q+    Always Query before Inserting commands to the printer.
 /T:1   Printer Timeout factor = 1.
 /V+    Default colors for the Video display: blue on cyan.
 /W+    Warning messages for printer errors are enabled.

The Print Spooler is now Enabled and printing is not Suspended.
                                                Type "PCKSPL /?" for help.
```

Using the Spooler With Other Software

Other Resident Programs That Use Pop-ups

The PC-Kwik hot-key pop-up display can be used with many resident programs which have their own pop-ups. If you find the Spooler hot-key combination conflicts with the hot keys of other programs, simply redefine the Spooler's hot-key combination with the /A parameter when you invoke the Spooler.

There are some resident programs which intercept keyboard input characters and never pass them on. You may still use these programs and have the Spooler pop up, if you always load the Spooler *after* you load such programs.

Borland's Sidekick and Sidekick Plus

The Sidekick manual warns you that you must load Sidekick *last*. If you load any **two** other programs which also intercept keyboard interrupts after you load Sidekick, the system halts abruptly. This includes the Power Pak Print Spooler, Superkey, Cruise Control, keyboard enhancers and even some non-resident applications such as Microsoft Word. You can prevent such problems by loading the Print Spooler (and other resident programs) *before* you load Sidekick. Alternatively you may use the /H- switch when invoking the Print Spooler; this eliminates its keyboard hot-key monitor.

Environments

Load the PC-Kwik Print Spooler *before* loading DESQview, Microsoft Windows, Software Carousel, or other environment programs. Do not attempt to load it in a separate window of one of these environments.

DESQview from Quarterdeck
Do *not* use the Spooler's /H- parameter if you intend to use DESQview. If you do, the Print Spooler pop up may freeze the system. Instead, use /H+.

To avoid pop-up problems and save memory at the same time, load the spooler with no hot-key support (/K-). Then define a DESQview window which invokes PCKSPL with no parameters and produces the Spooler's print control window from the DOS prompt. When setting up the DESQview window for the Spooler, set the memory size to 48K. Set the starting height and maximum height to 8. Set the starting width and maximum width to 40. Choose a starting row between 1 and 16 (inclusive) and a starting column between 1 and 39 (inclusive). Then set *Close on exit to*

DOS to Yes, *Writes directly to the screen* to No, and *Virtualize text and graphics* to No. Add the parameter /X:*rr,cc* to the Spooler command line, where *rr* and *cc* are the starting row and column you chose when you set up the DESQview window.

Microsoft Windows/286
When using Microsoft Windows/286, no pop ups appear unless you use the /H- switch to eliminate the Spooler's keyboard handler. Windows captures all keyboard input and does not let the Spooler see its normal hot key. When using /H-, activate the hot key with the <Shift> <Shift> <PrintScrn> combination. The colors may not be restored completely on Windows unless you have a VGA adapter.

If you use the Print Spooler to spool to a serial device, Windows may sometimes issue a COM in use error, and refuse to swap applications. You may be using .PIF files which show your applications using COM1 or COM2. Use the Windows PIFEDIT program to edit the .PIF files and remove the references to COM.

Microsoft Windows/386
Microsoft's Windows/386 is not compatible with the hot-key pop up feature of the Print Spooler, nor with most other pop-up utilities. *Do not attempt to use the Spooler's hot keys to pop up under Windows/386.*

If you do not use the /H- parameter when loading the Spooler, the hot keys are ignored while in the Windows/386 menus. The printing functions of the Spooler continue to work correctly under Windows/386.

This problem does not apply to other versions of Windows.

Microsoft Windows 3.0 in Enhanced Mode
Spooling is slow in Enhanced mode, even with the Spooler running. You may wish to turn off the Print Spooler while you are running Windows 3.0.

If you want to use the Spooler, first turn off device conflict warning messages, to prevent Windows from issuing false conflict messages. To turn off device conflict warning messages, go into Control Panel and select the 386 icon. From the device contention section, select "Never Warn".

Note: This means that Windows cannot warn you if more than one program is trying to use the same printer at the same time. Windows has no other way of protecting you from this situation. See page 214 of the Windows manual for more information. As long as the first application has sent all of its data to the Spooler, the second application can safely print.

By default, Windows only spools data from non-Windows applications. If you want to spool data from Windows applications too, you must tell Windows to send its print data to the BIOS instead of directly to the port. To set this up, add LPT1.PRN= to the Ports section of the WIN.INI file. Then go into Control Panel, select Printers, select Configuration, and then select the new LPT1.PRN port. An alternative choice is to select LPT1.OS2.

You may get slightly faster performance if you have the Spooler output directly to the BIOS. Use the /J+ parameter to do this.

You can also disable Print Manager to get a little better performance. Do not disable the Print Manager if you are only spooling data from non-Windows applications. To disable the Print Manager, go into Control Panel and deselect "Use Print Manager".

These suggestions may change; please see the READ.ME file for the latest information.

Microsoft Windows 3.0 in Standard Mode
You can only spool data from non-Windows applications. If you want to spool data from Windows applications too, you must tell Windows to send its print data to the BIOS instead of to the port. To do this, add LPT1.PRN= to the Ports section of the WIN.INI file. Then go into Control Panel, select Printers, select Configuration, and then select the new LPT1.PRN port.

If you print from more than one Windows application, do *not* disable the Print Manager. Print Manager prevents mixing print data when multiple Windows applications are trying to print at the same time, although it has no effect with non-Windows applications. See page 214 of the Windows manual for more information.

Spooler Print Control Without Hot Keys Under Windows 3.0
To use the Spooler without hot keys, you can make a .PIF file to invoke the Spooler from within Windows, giving it no parameters. Make sure that the PC-Kwik Print Spooler is already loaded before starting Windows. Then, you must have a copy of the .PIF file in your Windows directory. This does not require pop-up support in the Spooler.

Selecting the .PIF file from the Windows menu executes the Print Spooler program and displays the Spooler's pop-up print control menu. Note that this method provides the Spooler's full set of print control features, even if you eliminate some or all of the pop-up features when you load the Spooler. If you expect to pop up the Spooler only while using Windows, eliminate the pop-up code and make more memory available to Windows by using /K-.

Consult your Windows documentation if you need help with constructing a .PIF file.

Hercules Graphics

If you are using a Hercules video adapter or equivalent, you may get an incorrect display after returning from the pop-up box in graphics mode. The Spooler cannot determine which of two graphics pages your program was using. If, within two seconds of returning from the pop-up window, you again press the normal hot-key combination, the Spooler switches to the other graphics video page, *without actually popping up*. It continues to consider that page to be the active page until you tell it to switch.

Appendix E

HARDWARE & SOFTWARE SUPPORTED

Hardware Supported

IBM Personal Computers and Compatibles

The PC-Kwik Power Pak programs have been tested with the IBM PC, XT, AT, Portable, Convertible, and PS/2. They have been tested on both 5¼-inch standard and high-capacity diskettes and on 3½-inch diskettes. They have been tested with XT, AT, 386, 486, and PS/2 hard disk systems. They have also been tested with many computers which are compatible with these computers.

Refer to the READ.ME files for the most up-to-date information on running Power Pak on personal computers which may not be fully IBM compatible, as well as any recommended restrictions on the use of Power Pak with other computers.

Super PC-Kwik and Bernoulli Drives

IOMEGA Bernoulli drives are supported by Super PC-Kwik by placing a special driver in the CONFIG.SYS file of your boot disk. This driver allows the Super PC-Kwik program to monitor transfers to and from Bernoulli drives.

To install the Super PC-Kwik driver:

1. Be sure the file PCKWIK.SYS is on your boot disk either in the \PCKWIK subdirectory or in a subdirectory of your choice.

2. Identify the line in your CONFIG.SYS file that specifies the Bernoulli driver (IDRIVE.SYS, RCD.SYS, or equivalent) and place the following line directly after it:

   DEVICE=C:\PCKWIK\PCKWIK.SYS

   If you placed the file PCKWIK.SYS in a directory other than the \PCKWIK subdirectory, specify the correct subdirectory.

   Note: Both QEMM and 386MAX allow you to load device drivers in their high memory area. Whether or not you load your Bernoulli driver high, you *must* load the Super PC-Kwik driver in low memory.

3. Reboot your system. You should notice a sign-on message from the PCKWIK.SYS device during the boot process.

4. Load Super PC-Kwik as you normally would.

Note: Add the special PC-Kwik driver even if you do not wish to cache your Bernoulli drives, because Super PC-Kwik detects the drive and tries to test it, even if it is not to be cached. It needs the driver to do so. If you don't wish to cache your Bernoulli drive, use the Super PC-Kwik /- parameter to suppress caching.

When Super PC-Kwik is loaded, it first checks for the Super PC-Kwik driver. If Super PC-Kwik has trouble with this driver, it issues one of the following two messages:

WARNING: PCKWIK.SYS placed after non-disk driver.
/-d Drive *d* cannot be cached -- physical unit unknown.

If you receive the first message, check to see that you have placed PCKWIK.SYS after the Bernoulli driver and that your Bernoulli box is turned on. If you receive the second message and *d* is the drive letter for one of your Bernoulli drives, check to see that you have

placed the PCKWIK.SYS file either in the root directory of the boot disk or in the \PCKWIK subdirectory on the boot disk. Also check to see that you have correctly spelled the name of the driver in your CONFIG.SYS file.

Note: You may have received a program called IOMCACHE with your Bernoulli box. Because you may only run one disk caching program at a time, remove IOMCACHE from your system before you install Super PC-Kwik. Super PC-Kwik replaces the functions of IOMCACHE.

Super PC-Kwik and Large Disk Drives

Super PC-Kwik was designed to support large hard disks. Several considerations apply to large disks, however. Versions of DOS prior to 4.0 assume that each disk drive has no more than 65,536 sectors, and that each sector is 512 bytes (about 32 million bytes total). The BIOS normally assumes that each sector is made up of 512 bytes. When a driver is written to support a disk with more than 32 million bytes, various techniques are used to exceed this DOS size limitation. These techniques include:

- Partitioning the drive into logical drives, each of which contains 65,536 sectors or fewer.
- Increasing the logical (DOS level) sector size so it is larger than 512 bytes.
- Increasing the physical (BIOS level) sector size so it is larger than 512 bytes.

Super PC-Kwik has been designed to support disk drives which have been partitioned into logical drives. It also supports drives which have a logical sector size of greater than 512 bytes. Generally speaking, restricting your disk partitions to 32 megabytes or less and using a physical sector size of 512 bytes provides the best performance. When Super PC-Kwik is loaded it analyzes each of

your hard disks and informs you if it has detected a drive which it cannot cache.

Note: Cluster size is not an issue. Super PC-Kwik places no requirements on the number of sectors DOS allocates at a time.

Using Super PC-Kwik with RLL, ESDI, IDE and SCSI Disk Controllers

The Super PC-Kwik program has been tested with several Run Length Limited (RLL), ESDI, and IDE hard disk controllers. Generally Super PC-Kwik automatically detects the larger number of sectors per track provided by these controllers. The size of the track buffer is shown on the screen display. If you prefer a different track buffer size, use the /T:*nn* parameter.

Super PC-Kwik supports Adaptec, Future Domain and Allways SCSI disk controllers. It may not recognize the partitioning schemes for other SCSI controllers, so you may need to either partition the disk as one large partition, or load the PC-Kwik device in your CONFIG.SYS file. Add the line:

```
DEVICE=\PCKWIK\PCKWIK.SYS
```

after the line defining the driver for the SCSI disk.

The DISKREAD.ME file may contain more information on support for specific controllers.

Using Super PC-Kwik With SyQuest and Plus Passport Removable Disk Drives

Super PC-Kwik now supports both the SyQuest and the Plus Passport removable disk drives. Normally, Super PC-Kwik detects the existence of these drives and caches them automatically.

SyQuest Drives
Super PC-Kwik looks for the SyQuest device driver. If it finds the driver, it tests to see if there is a SyQuest drive on your system and which drive letter it is. When it finds a SyQuest drive, it locks the drive so the disk cannot be removed while the cache is active. When the cache is not active, Super PC-Kwik checks regularly to see whether you have pushed the lock button in to unlock the drive. When there is no activity and the lock button is pushed in, the drive is released and you can remove the disk. If there is disk activity, it may take a few seconds for the drive to unlock.

Some adapters, such as Adaptec, do not use the SyQuest device driver program. We recommend you install the driver anyway, to ensure that Super PC-Kwik runs correctly. If you choose not to use the driver, you should use the /SQ:*d* parameter to indicate to Super PC-Kwik that drive *d* is a SyQuest drive and should be treated as such even though the device driver has not been installed.

Plus Passport Drives
If you are using a Plus Passport drive, you must use the new /PP parameter when you load Super PC-Kwik. This parameter runs a test that determines which drive is the Plus Passport drive and provides support for locking and unlocking the drive while the cache is active.

Disk Types Not Supported

The current version of the Super PC-Kwik program does not support two kinds of disk drives:

1. Some removable cartridge disks. The DISKREAD.ME file may contain more information.
2. Diskette drives with a physical sector size other than 512 bytes or which do not conform to the standard DOS format.

In our experience, all diskette drives supported by DOS use a sector size of 512 bytes. If you have a drive which does not conform to the DOS format, specify that it is not to be cached by using the */-d* parameter.

Accelerator Hardware on PC and XT Computers

If you have increased the clock rate of your PC, XT, or compatible above the standard 4.77 MHz you may be aware that DOS refuses to perform certain functions such as FORMAT and VERIFY unless you switch back to the standard speed. Super PC-Kwik includes a correction to this problem that allows you to format and verify at the higher clock speed. If you are already doing this because you loaded another software program, such as FASTVRFY, unload that program before installing Super PC-Kwik.

Software Supported

The Power Pak programs have been tested successfully with IBM DOS versions 2.0, 2.1, 3.0, 3.1, 3.2, 3.3, and 4.0. They can be used with the vast majority of application software, both resident and non-resident.

Check the READ.ME files for the latest information on restrictions which apply to specific application software and current information on recent DOS versions.

RAM Disks and Print Spoolers

We recommend using the RAM Disk and Print Spooler supplied with Power Pak, since they are designed especially to work with the Super PC-Kwik Disk Accelerator, the Keyboard Accelerator, and the Screen Accelerator.

If you wish to use a RAM disk or print spooler other than those supplied with Power Pak, and your cache is loaded in conventional memory, any RAM disk or print spooler that works well with your hardware should work well with Super PC-Kwik.

If your cache is loaded in expanded memory, the RAM disk or print spooler provided by the expanded memory board manufacturer should work well with Super PC-Kwik.

If your cache is loaded in extended memory, see the discussion of the /Ex:*nnnnn* parameter in Appendix A for information on sharing extended memory with a RAM disk or other software. Most version of RAMDRIVE.SYS are *not* compatible and we recommend you use the RAM Disk included with Power Pak.

Power Pak and Microsoft Windows 3.0

We have discovered some tips that help you get the most out of Windows when you are using the Power Pak programs. These include changes you must make at installation, changes you must make to your Windows configuration file, tips for loading and using each program, and tips about using several different memory managers.

We have also added a new measurements display so you can track Super PC-Kwik's performance under Windows as well as under DOS.

See the READ.ME files for last-minute or product-specific information about using Windows 3.0.

Installation
Because you cannot run two disk caches at once, be sure to disable SMARTDRV.SYS or any other caching program before you install Super PC-Kwik; remove the line in your CONFIG.SYS file that defines the device driver and reboot your system. The Power Pak installation program detects the presence of SmartDrive other caches and asks you if want to remove any that it finds. When you run Super PC-Kwik, it does not load if it detects that SmartDrive is running.

The PCKWIN.SYS device driver is necessary for Super PC-Kwik to lend memory to Windows. If Super PC-Kwik can't lend memory to Windows, Windows may not find enough of the right type of memory to run.

Be sure you install the device driver PCKWIN.SYS in your CONFIG.SYS file. Our installation program does this automatically if you tell it you will be using Windows and you choose to modify your system files. If you do not choose to have the installation program modify your CONFIG.SYS file, you must add this line to the file:

```
DEVICE=C:\PCKWIK\PCKWIN.SYS
```

If you install the Super PC-Kwik program in a subdirectory other than \PCKWIK or on a drive other than C:, substitute that subdirectory and drive.

Changes to Your Windows Configuration
If you are running Windows in Enhanced mode, you should add a new parameter to your Windows system configuration. In the Windows SYSTEM.INI file, there is a section titled [386enh]; add this line there; it doesn't matter whether you type it in uppercase letters or lowercase letters.

```
VirtualHDirq=FALSE
```

Loading Super PC-Kwik
Normally the Super PC-Kwik defaults work well with Windows. If you are going to use Windows in Standard or Enhanced mode, and you want Super PC-Kwik to lend memory to Windows, you should use extended memory for the cache buffer. Load Super PC-Kwik with the /E parameter to put the cache buffers in extended memory. If you answered Yes to the question about using Windows Enhanced mode when you installed Power Pak, the INSTALL program automatically adds this parameter to your POWERON.BAT file.

When the cache is in extended memory, Windows does not always default to Enhanced mode. To check which mode Windows has loaded in, select About the Program Manager from the Program Manager window. If Windows is not running in Enhanced mode, use WIN/3 to load Windows.

If you use Windows in Real mode, you can use extended, expanded, or conventional memory for the cache buffers. We recommend using expanded memory if your system has it.

Using the Spooler
Windows only allows you to spool data from non-Windows applications in either Enhanced mode or Standard mode. To spool data from Windows applications, you must tell Windows to send print data directly to the BIOS. Add this line to your WIN.INI file:

```
LPT1.PRN=
```

Then exit Windows, restart it, and select the new LPT1.PRN port.

To get maximum performance in Enhanced mode, we suggest that you disable the Print Manager and turn off device conflict warning messages. Take care that the first application has sent all its data to the printer before you print from a second application; Windows can't warn you if more than one program is trying to use the printer.

We have sometimes found better performance using the Spooler under Windows when we use the /J+ parameter, although it is not required.

Using the Screen and Keyboard Accelerators
All Screen Accelerator features work normally for non-Windows applications. The Screen Accelerator automatically turns off blanking when you load Windows, since mouse movement in Windows neither unblanks the screen nor resets the blanking timer. ReView works in one DOS window.

If you use QEMM or 386MAX as your memory manager, you may need to load the Keyboard Accelerator with the /MA parameter. ReDOS is available in a single DOS window in Enhanced mode. Key acceleration works normally in all non-Windows applications.

The Screen and Keyboard Accelerators are limited with Program Manager and Windows applications, because Windows takes over all keyboard and display functions. There is no screen acceleration or ReView in Program Manager or Windows applications because the screen is in graphics mode.

Using HIMEM.SYS

HIMEM.SYS does not provide UMBs; thus, the Super PC-Kwik program cannot load its program code into UMBs but loads instead in conventional memory. You can use extended memory for the cache buffers.

Using 386MAX

To use 386MAX with Windows 3.0 and Super PC-Kwik, you must use 386MAX v5.1 or higher. Load the Super PC-Kwik cache buffers in extended memory and tell 386MAX to provide the maximum amount of extended memory and no expanded memory. If you use the EMS=0 parameter when you define the device, you automatically produce the maximum extended memory with no expanded memory, and Super PC-Kwik automatically loads its buffers in extended memory by default.

If you prefer, use the EXT=*nn* parameter for 386MAX, explicitly setting an amount of extended memory to use. In this case, you must also explicitly tell Super PC-Kwik to use extended memory by using the /E parameter; otherwise, Super PC-Kwik defaults to using expanded memory.

Note that 386MAX v5.1 does not support Windows in Standard mode.

Using QEMM
Use QEMM v5.11 or higher when you use Super PC-Kwik with Windows 3.0. Because QEMM provides both expanded and extended memory, you must explicitly tell Super PC-Kwik to use extended memory by using the /E parameter when you load it, if you are using Windows 3.0 in Enhanced or Standard mode. We have also found that it works well to use QEMM's NOSORT parameter to be sure enough contiguous memory is available to Super PC-Kwik.

Windows Measurement Display
You can now display measurements of the cache's activity while you are running Windows. From the Windows Program Manager, select New... and add the new program item:

```
C:\PCKWIK\SUPERWIN.EXE
```

You can display either a text summary of cache activity with a dynamic bar graph or just a text summary. You can flush, enable or disable the cache from this display. And, when the Measurement Display is minimized, you can choose an icon which displays the percentage of cache hits or one which displays the Multisoft logo.

This Windows measurement display runs only with version 2.1 of Power Pak. If you try to run it with previous versions of Power Pak, an error message is displayed.

Power Pak and DESQview

DESQview works best when run in expanded memory and with exclusive access to the first 64 Kb of extended memory. Use the /A and /R:64 parameters with Super PC-Kwik to ensure this. Always load the Power Pak programs first before you load DESQview; never load Power Pak from a DESQview window.

Because DESQview takes over the screen display, the Screen Accelerator does not work while DESQview is running. The Keyboard Accelerator, Screen Accelerator and Spooler must not put their program code in expanded memory. The easiest way to do this is to use the /7- parameter for Super PC-Kwik.

DESQview's ability to virtualize screens when multi-tasking background tasks depends on a private interface that requests the memory from QEMM, rather than using a standard interface. Super PC-Kwik cannot detect these private requests and therefore cannot lend memory to DESQview for screen virtualization. Either do not multi-task programs in the background, or reserve enough memory with /R:*nnnnn* to accommodate all the windows you need to virtualize. DESQview generally needs 16 Kb for each text-based window and up to 256 Kb for each graphics window, in addition to the base 64 Kb you must initially reserve for DESQview.

Communication Software and Extended Memory

Access to extended memory on the IBM AT and compatibles must be accomplished with interrupts turned off. By most standards the period in which interrupts are turned off is quite short. However, there is a chance that high-speed data communication (e.g., via 2400-baud modem) may not be possible if the disk is being accessed at the same time. If you experience difficulty, we suggest you specify the /B- parameter for the Disk Accelerator when you use extended memory. Turning off batch copying limits the period when interrupts are turned off, but slightly reduces the performance gain. Interrupts are not a consideration if your extended memory is being used as expanded memory on an 80386 with an expanded memory manager such as QEMM.

Networks

Super PC-Kwik is compatible with network workstations or servers that run DOS versions 2.0 to 4.0. On workstations, only the local drives are cached, and the Super PC-Kwik program informs you that drives detected as remote drives are not being cached. Super PC-Kwik can be used on DOS-based servers and generally greatly enhances their operation, especially when large cache sizes are used.

Note: You may need to use /B- when using /EM or /EP. You may also need to use /-d* to eliminate testing remote drives if the cache consistently fails to load on the network; see the DISKREAD.ME file for more information.

The DOS VERIFY Command

The DOS VERIFY command allows you to instruct DOS to perform a verify operation after each write to the disk. There are two things you should consider before using this option:

1. The verify option does not cause DOS to actually compare the data which was written with the data on the disk; it only verifies that the data on the disk can be successfully read.
2. The verify option significantly slows down applications that do much disk writing.

Expanded Memory Simulators

Several software products allow extended memory to function as expanded memory. There are two types of expanded memory simulators. Super PC-Kwik may be loaded in either type of simulated expanded memory using the /A+ parameter.

Those simulators which operate on 80286-based computers require that data be copied to and from extended memory to implement the paging functions of the Expanded Memory Specification. The performance overhead of this copying causes Super PC-Kwik to run more slowly than when it is loaded in actual expanded memory or directly in extended memory.

We suggest that you load Super PC-Kwik directly in extended memory rather than in this simulated expanded memory. You can either leave out the expanded memory driver or arrange for Super PC-Kwik and the expanded memory driver to use different parts of extended memory. Refer to the documentation provided with the expanded memory simulation software for information on how to restrict the amount of memory it uses. Use the /Ex:*nnnnn* parameter to specify which part of extended memory should be used for the cache. Be very cautious in specifying the lower bound for Super PC-Kwik to use in extended memory; it trusts the number you give it and does not check that it is valid.

Those simulators which operate on 80386-based systems operate efficiently because special features of the 80386 processor are used to avoid copying data to perform page mapping. You can use this simulated expanded memory for the disk cache with no performance loss.

DOS FASTOPEN

DOS versions 3.3 and above contain a feature called FASTOPEN, which sets up a special purpose cache to reduce disk accesses for file opens. While this program is compatible with Super PC-Kwik, we have found that it seldom provides any performance improvement over that provided by Super PC-Kwik alone.

Appendix F

ACCESSING ASCII FILES

Normal DOS text files are called ASCII files. Unlike the files produced by most word processors, spreadsheets, and databases, ASCII files have no formatting information or special structure. The READ.ME files on the distribution diskette, the DOS file CONFIG.SYS, and DOS batch control files (*.BAT) are all ASCII files. The information below tells you how to display, create, and modify these files.

Displaying READ.ME Files

The INSTALL program on the distribution diskette sets up several files, each with a name which ends in READ.ME. There is one READ.ME file for each of the Power Pak products. These files contain information about hardware and software compatibility and information which became available too late to be included in this edition of the manual.

The INSTALL routine gave you a chance to look at these files, but you may wish to refer back to them again after you have installed Power Pak. Use the DISPLAY utility provided with Power Pak to look at ASCII files. This utility was installed on your hard disk when you installed Power Pak. To look at the DISKREAD.ME file, for instance, type:

```
CHDIR \PCKWIK
DISPLAY DISKREAD.ME
```

Note: If you had the INSTALL program place the Super PC-Kwik directory and files on a drive other than the default, specify the drive before changing directories.

The DISPLAY command displays the information in the file on your video monitor. The cursor keys and the <PgUp> and <PgDn> keys move the display to different parts of the file. Use the <Esc> key to exit the program.

Printing a READ.ME File

To print the information in a READ.ME file, such as DISKREAD.ME, type:

```
CHDIR \PCKWIK
COPY DISKREAD.ME PRN
```

Note: If you had the INSTALL program place the Super PC-Kwik directory and files on a drive other than the default drive, specify the drive before changing directories.

Batch Files

Using DOS involves typing in one-line commands from the keyboard. Because you frequently repeat the same sequence of commands, DOS allows several commands to be placed together in a file and executed automatically. The files are called batch files and use the filename extension .BAT.

Executing Power Pak Automatically

DOS executes a batch file named AUTOEXEC.BAT each time it is restarted. This file contains commands that set up the environment of the PC, such as setting the date and time and setting up a path of directories to be searched whenever a command is entered. Most users find it convenient to place a command in their

AUTOEXEC.BAT file to start the Power Pak programs when the system is booted.

Note: If you answered Y when the INSTALL program asked whether it should modify your AUTOEXEC.BAT file, the command is already inserted. Check the file before adding further commands.

Creating and Modifying Batch Files

There are three ways to create or modify a batch file.

1. Use the COPY command.
2. Use the EDLIN program.
3. Use a commercial word processor.

When you need to create a particularly short batch file, it may be easier to use the COPY command. (*Note:* The COPY command does not warn you if a file of the same name already exists. Be sure you do not already have a file with the same name before you begin editing.) To create a batch file called S.BAT that includes the command to load Super PC-Kwik, you could enter:

```
COPY CON S.BAT<Enter>
SUPERPCK /S:256<Enter>
<Ctrl>Z<Enter>
```

The first line instructs DOS to copy from the keyboard (console) to the file S.BAT. The second line is the command you wish to place in the batch file. The third line is the special key sequence created by holding down the <Ctrl> key and pressing the Z key. This sequence is the special code for end-of-file and notifies DOS that you have completed the file.

Note: The DOS prompt does not appear on your screen while you are creating the file.

When you are creating or changing longer batch files, it is easier to add and change commands in the batch file. DOS includes a very basic editor called EDLIN.

The following sequence creates the same file as that created by the COPY command above:

```
EDLIN  S.BAT<Enter>
I<Enter>
SUPERPCK  /S:256<Enter>
<Ctrl>C<Enter>
E<Enter>
```

Note: You should see the words "New File" just after entering the EDLIN command. If they do not appear, you may be editing an existing file. If this is not what you want, type E<Enter> to exit.

The first line invokes the editor and tells it to create a new file called S.BAT. An asterisk appears as the prompt for the editor. The second line tells the editor you wish to insert a series of lines. A number 1 followed by a colon appears as the prompt for insert mode. The third line is the command that you wish to place in the batch file. The fourth line informs the editor that you are done: hold down the <Ctrl> key and press the C key. The final line tells the editor to exit after completing the creation of the S.BAT file.

Check your DOS manual for detailed information on how to create and edit files using EDLIN.

You may own a word processor that is capable of creating batch files. Many word processors place special formatting codes in the

files they create; DOS can't interpret these formatting codes when it tries to execute the file as a series of commands. These word processors usually have a way of either creating a file without the formatting codes (sometimes called "non-document mode") or converting a file with these codes into a file that does not have them (sometimes called "exporting the file" or "converting to standard ASCII"). Refer to your word processor documentation for information on how to create a file without formatting codes.

Appendix G

DISK BENCHMARK TESTING

What is Benchmark Testing?

The term benchmark is used in the computer industry for programs that measure the performance of hardware and software. Since programs like Super PC-Kwik are designed to improve system performance, many people use benchmark programs to measure that improvement. Benchmarks designed to indicate how well disk drives perform are often used to demonstrate the effectiveness of disk caching software.

This appendix discusses several industry-standard benchmark programs and Multisoft's BENCHPCK benchmark program. We also provide some suggestions on getting the most accurate and useful results. The suggestions are based on many hours of testing experience and the knowledge of how disk caches operate.

Even though benchmarks are readily available and easy to run, setting up a good test and evaluating the results accurately can be challenging. As an example, when testing a disk cache with software that creates and deletes files on a disk, the tests should be run on an empty disk (when possible), the system should be booted before each test, and the same type of memory should be used for each test pass.

Using Benchmark Programs to Test Cache Software

Benchmark programs are generally intended for experienced computer users. Most have little documentation and require an intimate knowledge of the hardware and software to get meaningful results. Programs from reputable sources, like the large PC industry magazines, are reliable when used correctly but do not tell you much about the meaning of the results. The suggestions given below assume you have a thorough understanding of DOS operations.

1. If possible, create an empty DOS partition on a hard drive and use it for the tests. If this is not possible, use a utility program such as PC-Kwik Power Disk to defragment an existing partition. (*Note:* This is more important when comparing one system to another than when comparing the same system with different software.) For testing on diskettes, use freshly formatted diskettes.
2. Run CHKDSK before testing to be sure the file directory structure is sound.
3. Remove all unneeded resident programs or device drivers from the AUTOEXEC.BAT and CONFIG.SYS files.
4. Run the benchmark program several times with no disk cache software running to see if the results from your hardware and operating system software are consistent.
5. Keep print screens or good notes of your results. If you get conflicting or unexpected data, rerun parts of the tests.
6. Boot your system before each test to avoid getting inconsistent measurements, which can occur when test files are created at different locations on a disk.

Using Data Transfer Rate Tests

Several benchmark programs measure the data transfer rate of disk drives and their controllers. Two of the more familiar of these tests are CORETEST from CORE International, a manufacturer of high-capacity, high-speed disks, and a sub-test within Power Meter.

Here are some results from three benchmark programs that measure data transfer rates. Notice how different programs report different values.

Computer	Kbytes/second	Benchmark Software
10Mhz 286	163	CORETEST
10Mhz 286	170	ATDISK
10Mhz 286	181	Power Meter
10Mhz 286 with Super PC-Kwik	2825	CORETEST
10Mhz 286 with Super PC-Kwik	2688	ATDISK
10Mhz 286 with Super PC-Kwik	2525	Power Meter 1st run
10Mhz 286 with Super PC-Kwik	2891	Power Meter 2nd run

Warning: Although tests of data transfer rates show a dramatic increase when using a disk cache, the tests were not designed for caching. Data transfer rates are not a realistic measurement for comparing disk cache software. As you can see in the values above, if you run a benchmark twice, the second measurement is often different.

Typically these tests repeatedly read a few disk sectors and measure how many reads can be done in a given period of time. With caching, all of these reads (except the first) should come from the cache buffer. If you use a data transfer rate test to compare caches, all you test is how quickly the cache management code can find the correct sector in the cache. While it is good to be able to find the correct sector quickly, an intelligent cache, such as Super PC-

Kwik, has some overhead that shows up in this situation, but that makes its performance in a more realistic situation much better.

Testing how frequently the cache buffer provides the requested sector without accessing the disk during complex sequences of reads and writes provides a more realistic test of cache performance. This is how real systems operate. Another realistic test determines how much time is saved in actual DOS file transfers. Benchmarks that simulate file activity using different size files and both random and sequential activity more accurately reflect normal system operation.

The best test of a cache is with your own applications, which do more than constantly read and write the same sectors to the disk. Timing a disk-intensive process such as indexing or sorting a database gives you the best idea of how much performance gain a cache provides in your environment.

Benchmarks are just a tool for comparing specific subsections of various machines. It helps to understand exactly what each test is measuring, and how it gets its measurements, in order to know if the test is representative of normal usage.

Benchmark Testing and Cache Sizes

One of the parameters under your control when testing a cache is the cache size. If the test uses a variety of file sizes, then the cache size should have a significant effect on the results. If the test file size being used is larger than the cache, disk sectors are frequently flushed from the cache buffer and new disk sectors are added. A cache buffer that is just a little *smaller* than the test data size performs significantly worse than a cache buffer that is a little *larger* than the data size. Increasing the buffer size so it is much larger that the test data size seldom increases the performance

gain of the benchmark test. This usually does not hold true for real-life system operation where larger cache sizes can make more difference.

When loaded, Super PC-Kwik takes the amount of memory requested and uses this memory for its code, cache buffer, and cache index, except when you use extended memory. This makes it difficult to know beforehand exactly how much of the space allocated is actually used for the buffer.

Some cache programs use parameters to specify the exact buffer size. Super PC-Kwik's approach is to have you specify the total amount of the particular memory to be used rather than just the buffer size. This is usually the more convenient choice, but may cause some confusion when you measure performance.

To obtain a specific cache buffer size you may need to load and unload a few times, varying the memory size until you obtain the buffer size you are looking for. The actual size of the cache buffer is listed on the Super PC-Kwik parameter screen on the line showing the memory type chosen, and is listed by Multisoft's BENCHPCK benchmarking program. You can also use the MAP utility to find the cache size.

File Processing Throughput and Seek Times

Seek time is a measure of the time it takes to move the physical mechanisms across the surface of a disk. *Average seek time* is a standard measure of the speed of disk hardware.

Seek tests usually do not include reading or writing data and are therefore not representative of DOS file processing operations. A disk cache only has the option of asking the disk to perform the physical seek or of doing nothing, since no data transfer was re-

quested. Whichever action a disk cache chooses, the seek test is not a meaningful measure of how a disk cache program functions in normal conditions.

Some Commonly Used Benchmark Programs

Peter Norton's System Information (SI)
(Santa Monica, CA)

Peter Norton Computing's Utilities and Advanced Utilities (version 4.0) have a program to test the performance of computers and report information on a computer's environment. By running the program with a drive letter specified, SI gives you a number called the Disk Index (DI) which relates your computer's performance relative to an IBM PC-XT which has a value of 1.0. To run Norton's SI, type:

SI *d*:

where *d* is the drive to test.

This test shows significant improvements when a disk cache is running.

Note: The Norton DI is meant to give a user a general indication of the performance of a machine and is not meant to accurately compare the differences in cache program effectiveness. See the section above on the value of disk data transfer rate tests.

PC Magazine's Benchmark Diskette
(Ziff-Davis, New York, NY)

PC Magazine produces a complete series of benchmark programs which are used in their performance testing labs. Contact PC Magazine to find out how to obtain a copy of the tests. The File Access Speed Benchmark Test is a good test to measure DOS and

BIOS disk I/O system performance. The test sequentially and randomly reads and writes files using two or more record sizes to simulate small and large data activity.

The program is menu driven and asks for the disk drive to test, the number of repetitions to run (1 to 9), and whether you want to change data before writing. We suggest trying Super PC-Kwik on all disk types, choosing any number of repetitions, and changing data before writing. Changing the data before writing more closely simulates real disk activity. The program gives the times measured to do sequential file creations, writes, and reads, the times for random writes and reads, and the totals.

Multisoft's BENCHPCK for Benchmark Testing

Included with Super PC-Kwik is a benchmark program designed specifically to test disk drive performance. BENCHPCK tests your drives and their associated data transfer capabilities with or without Super PC-Kwik running.

Multisoft's benchmark program is similar to the PC Magazine benchmark. It creates a file, reads and writes the file sequentially, reads and writes the file randomly, then closes and deletes the file.

To run BENCHPCK, you use the RUNBENCH batch file provided with Power Pak. Two different record sizes are tested during the run and the results are shown on the screen. The first time RUNBENCH is run it stores the measurements of your computer, without caching, as a control. At the end of the test, a graph compares your system to three industry-standard machines: an IBM PC/XT, an IBM PC/AT, and a Compaq 386/20 (hard disk performance only).

The amount of memory available to Super PC-Kwik affects the results of the tests. A cache buffer large enough for the test file provides much better results than a buffer smaller than the test file. It's also good to remember that a benchmark is a useful comparison tool, but often does not reflect the actual performance benefits you might get because of the fixed size of the file and records used for testing.

Note: It can take anywhere from 6 seconds to over 10 minutes to run the benchmark, depending on your system.

To run the benchmark batch file:

1. Make sure you are in the subdirectory with BENCHPCK and Super PC-Kwik:

   CD \PCKWIK

2. Make sure there are no memory-resident programs loaded *after* Super PC-Kwik and there are no other disk caches running.

   Warning: Although BENCHPCK can be used to measure the effectiveness of any disk cache, **never** run two caches at the same time. Be sure to remove any other caches from your system before running RUNBENCH or BENCHPCK.

3. Make sure the DOS VERIFY program is turned off. Otherwise the benchmark can take up to three times the normal time to run.

4. Type RUNBENCH *d*: (*d* is the disk drive you want to test).

You can benchmark any software or hardware changes made to a system that might affect the performance of a disk, including running other disk caches.

RUNBENCH Parameters

The RUNBENCH batch file allows you to run the benchmarking program with several advanced features. To list optional parameters for running the benchmark, type:

```
RUNBENCH ?
```

The command format is:

```
RUNBENCH d: /s:n /x
```

where:

d is the letter for the drive on which to run the benchmark test

s is the size of the test file:
/P 256K byte file 1 pass (the default)
/S 256K byte file 3 passes
/M 1M byte file 2 passes
/L 2M byte file 1 pass

n is the number of passes to run the test; *n* is between 1 and 9 and defaults to 1, 2, or 3 as shown above.

x is any optional parameters for Super PC-Kwik

Note: You must type the parameters in this order and with a space between each parameter.

Example: RUNBENCH C: /M:3 /E+/Q+

Meaning: Run the test three times through on disk drive C using medium-sized files (1 megabyte) and start Super PC-Kwik using extended memory and the option to quickly return to the DOS prompt.

Appendix H

ERROR MESSAGES

Super PC-Kwik

This section contains messages that the Super PC-Kwik program may display in response to errors while you are loading it.

Errors: Loading Continues

When the following group of error messages display, Super PC-Kwik continues loading and ignores the error condition.

/A+ parameter ignored -- conflicts with /E+.

Explanation: You may not select both expanded memory (/A+) and extended memory (/E+).

/E+ parameter ignored -- not 80286/80386 system.

Explanation: Support of extended memory is only provided on IBM PC ATs and other systems with an 80286 or 80386 processor and BIOS support for extended memory.

/U parameter ignored -- PC-Kwik is not loaded.

Explanation: You have requested that the Super PC-Kwik program be unloaded when it currently is not loaded.

/-*d* Drive *d* cannot be cached -- physical unit unknown.

Explanation: If drive *d* is a RAM disk, Super PC-Kwik is simply informing you that it cannot cache a RAM disk. There is no error to correct.

If drive *d* is a remote drive in a network, it is inappropriate to cache this drive. You may want to install a cache on the system with the remote drive.

If drive *d* is installed in your system, it is installed in such a way that DOS accesses it without using the BIOS. In the case of Bernoulli drives, follow the steps outlined in Appendix A to enable Super PC-Kwik to recognize the Bernoulli box.

/-*d* Drive *d* cannot be cached; maximum drive number exceeded.

Explanation: The Super PC-Kwik program supports up to eight hard disk drives. With most drive partitioning schemes, this does not affect the number of partitions per drive. If you receive this message, your system has more than eight drives; only the first eight are cached.

/-*d* Drive *d* cannot be cached -- sector size incompatible.

Explanation: Drive *d* has a sector size which is not a multiple of 512 bytes.

Advanced support request ignored for Drive *d*.

Explanation: You have requested advanced support for your hard disk drives with the /H+ switch. Your hard disk controller appears not to be IBM compatible. Generic support is used for this drive.

Unrecognized parameter ignored: /x

Explanation: You have selected an option that is not recognized by the Super PC-Kwik program.

Unrecognized characters ignored

Explanation: You have typed a character that is not a recognized parameter or argument for the Super PC-Kwik program.

WARNING: The Cache is being loaded high by another program.

Explanation: A memory manager, such as 386LOAD, is trying to put the code for the Disk Accelerator into the Upper Memory Blocks. Let the Power Pak programs load themselves into high memory so there won't be any conflict and so you minimize the amount of high memory being used.

Errors: Loading Stops

When these error messages appear, Super PC-Kwik stops loading and returns you to the DOS prompt.

/F Flush request ignored--nothing to flush

Explanation: You have requested that the cache be flushed when loading the Super PC-Kwik program. This parameter is used to flush the cache after you have loaded the program.

Cannot unload -- Other programs above.

Explanation: You have requested that the Super PC-Kwik program be unloaded after loading one or more programs above it. You need to exit or unload these programs before unloading the Super PC-Kwik program.

Cache size requested too small.

Explanation: You have requested a cache size less than the minimum supported by Super PC-Kwik. Check the file DISKREAD.ME for the latest information on minimum and maximum cache sizes. Normally, the minimum is 64K bytes.

Expanded Memory Manager Problem; Function = *x*; Status Code = *y*.

Explanation: The expanded memory manager returned the error indicated. The memory manager may have also issued a message when you booted your system. You may wish to reboot your system to watch for such a message.

No Expanded Memory Manager found; Check CONFIG.SYS file.
Check that the most recent expanded memory manager is installed.

Explanation: The expanded memory manager has not been successfully installed. See the documentation for your expanded memory board for information on installing the expanded memory hardware and software.

Not enough memory for PC-Kwik program.

Explanation: There is not enough free memory in your system to load the Super PC-Kwik Disk Accelerator.

Problem with drive *d*.
Correct and then press any key.

Explanation: If you receive this message for a diskette drive, check to see that there is a diskette in drive *d* and that the drive door is closed. Then, press a key and Super PC-Kwik retries the operation. If the problem reoccurs, the diskette in drive *d* may contain bad sectors. If you have a disk test utility such as PC-Kwik Power Disk, use it to test the diskette. If you don't have Power Disk, or it confirms that there is a problem

with the diskette, format a fresh diskette and copy the files on the defective diskette to the new diskette.

If there appears to be nothing wrong with the diskette, your hardware may be incompatible with the advanced diskette support provided by Super PC-Kwik. In this case, reload Super PC-Kwik with the /D- parameter.

There is also a remote chance that this error message could appear for a hard disk. If you suspect bad sectors on your hard disk, back up all your files. Then, reformat your hard disk or use a disk utility such as PC-Kwik Power Disk to test the disk for bad sectors. (Reformatting detects the bad sectors and prevents them from being used again. A disk test utility like Power Disk detects problem sectors on your hard disk and removes them from further use.) Restore your files from the backup media. Finally, if you are sure that you have no bad sectors being used on your hard disk, specify the /H- parameter to instruct Super PC-Kwik to use generic support for your hard disk.

Program not loaded; invalid parameters.
Type "SUPERPCK /?" for information on parameters.

Explanation: You used parameters that are not valid for the Super PC-Kwik program. Use /? for a list of valid parameters and arguments.

Super PC-Kwik program already loaded.
You must unload before reloading with different parameters.

Explanation: You have requested that the program be loaded when it is already loaded.

There is not enough free memory in your system.
Your system has *nnnnn*K bytes of free memory.

Explanation: You have selected a cache or reserve size that exceeds the memory capacity of your system. Try a different value for the /S or /R parameters. If you are also using a RAM disk other than Power Pak's RAM Disk, you may wish to reduce its size or eliminate it altogether. If you requested the cache be loaded in conventional memory and you also have extended or expanded memory, try loading the cache in one of these alternate forms of memory using the /A or /E parameters.

XMS driver failure; cannot continue with installation.

Explanation: Super PC-Kwik has detected an Extended Memory Specification driver in your system and has attempted to use it to enhance access of extended memory. You may be using an old version of the HIMEM.SYS driver that comes with Microsoft Windows. Check your CONFIG.SYS file.

Warnings

Super PC-Kwik displays the following warning messages when the first sector of the drive or partition has an invalid signature. When the boot sector has a valid signature, Super PC-Kwik reads certain drive parameters from the boot sector and compares them to values obtained previously from the BIOS or from previous disk partitions. Some format programs may not put IBM-standard signatures in the boot sector even though they otherwise format the disk correctly, and the information obtained from the boot sector does not agree with the information obtained from the BIOS. Using the /G parameter determines which set of information Super PC-Kwik uses.

Super PC-Kwik automatically pauses when a warning message displays and waits for you to strike a key before it continues loading. Use the /K- parameter when invoking Super PC-Kwik if you want to it to continue loading without pausing.

WARNING: Boot sector for drive *d* contradicts BIOS; Boot information used.

Explanation: The boot sector for the designated drive contains information which is different than that provided by the BIOS. If you specified the default of /G+, Super PC-Kwik uses the information provided by the boot sector rather than the information provided by the BIOS. To use the information provided by the BIOS instead, use /G-

WARNING: Boot sector for drive *d* contradicts BIOS; Boot information ignored.

Explanation: The boot sector for the designated drive contains information which is different than that provided by the BIOS. Since you specified the /G- parameter, Super PC-Kwik uses the information provided by the BIOS rather than the information provided by the boot sector. If you would prefer to use the information provided by the boot sector, use the default /G+ parameter.

WARNING: Boot sector for drive *d* invalid; previous information used.

Explanation: The boot sector for the designated drive could not be used to obtain information about the drive. Super PC-Kwik uses the information provided by the BIOS instead. In some cases, it can use information from previous boot sectors on the same drive as well.

WARNING: Partition *x* differs from previous; no advanced support provided.

Explanation: Your system includes a hard disk which is divided into partitions. Super PC-Kwik has discovered that the boot sector for one of the partitions contains information which differs from the information provided by the boot sector for the previous partition. This new information is used for caching the designated partition but the advanced support feature is not used on the drive containing this partition.

WARNING: PCKWIK.SYS placed after non-disk driver.

Explanation: Either your Bernoulli box is not turned on or the driver PCKWIK.SYS is not placed after the Bernoulli driver in your CONFIG.SYS file.

WARNING: Using boot sector info. for partition *x* which differs from previous

Explanation: Your system includes a hard disk which is divided into partitions. The boot sector for one of the partitions contains information which differs from the information provided by the boot sector for the previous partition. Super PC-Kwik uses the new boot sector information to cache the designated partition. If you would prefer the information provided by the BIOS be used instead, add the /G- parameter to the Super PC-Kwik command line.

RAM Disk

Following are error messages that the PC-Kwik RAM Disk may display in response to error situations:

Bad Parameter Value - *x* - Ignored.

Explanation: An option has been specified that is not recognized by the RAM Disk.

Specified RAM Disk size is too small. Cannot create RAM Disk.

Explanation: A RAM Disk size less than 4K bytes was specified. Repeat the command with a /S:*nnnnn* where *nnnnn* is larger than 4.

Two PC-Kwik RAM Disks are already installed. You cannot load a third.

Explanation: Super PC-Kwik only supports two RAM Disks at a time, and there are already two active.

You must load PC-Kwik cache before using PC-Kwik RAM Disk.

Explanation: Either the Super PC-Kwik Disk Accelerator is not loaded, or the RAM Disk is in your PATH command and the path is being searched before Super PC-Kwik loads.

Keyboard Accelerator

/&U Unable to load into upper memory.

Explanation: You have requested that the Keyboard Accelerator move its code into Upper Memory Blocks but you do not have an XMS driver installed or there are not enough Upper Memory Blocks available to move the code. The code remains in conventional memory.

/F Can't open ReDOS command file *file*.

Explanation: The file you want to use either does not exist at all, does not exist in the directory path you specified or does not exist in the subdirectory containing the PCKKEY program. Check the location of the file, and check that you spelled the name of the file correctly in the parameter.

/M- Not valid after loading; using /M0 instead.

Explanation: You tried to disable ReDOS while the Keyboard Accelerator was running. Use /M0 to disable it and /M1, /M2, /M3 or /M4 to re-enable it.

/U Cannot unload -- Other programs above.

Explanation: You have other memory-resident programs loaded above the Keyboard Accelerator in memory. Unload the other programs first, then unload the Keyboard Accelerator.

/U The Keyboard Accelerator is not loaded. Cannot unload.

Explanation: You tried to unload the Keyboard Accelerator when it was not loaded in memory.

/*x* Unrecognized parameter.

Explanation: You used a parameter which is not valid for the Keyboard Accelerator. Use /? to get a list of valid parameters.

/*x* ReDOS code not enabled; parameter ignored.

Explanation: You used a parameter which controls the ReDOS command editor but you previously disabled ReDOS after loading it.

/x ReDOS code not loaded; parameter ignored.

Explanation: You used a parameter which controls the ReDOS command editor but you did not load ReDOS when you loaded the Keyboard Accelerator.

/x ReDOS popup window not enabled; parameter ignored.

Explanation: You used a parameter which controls the ReDOS pop-up window, but you previously disabled the pop-up window.

/x Sorry, non-resident and resident versions must be identical.

Explanation: You tried to load a different version of the Keyboard Accelerator than the one already running. You should only have one version of the Keyboard Accelerator on your system. Look at the startup screen to determine the version number.

Cannot load Keyboard Accelerator; Super PC-Kwik must be loaded first.

Explanation: You tried to load the Keyboard Accelerator without having the Disk Accelerator loaded. Since the Keyboard Accelerator shares memory with the Disk Accelerator, you must have the Disk Accelerator loaded before you load the Keyboard Accelerator. Load Super PC-Kwik, then reload the Keyboard Accelerator.

Resident version incompatible -- please load new version.

Explanation: You tried to load an earlier version of the Keyboard Accelerator. Check to make sure you have installed the most recent version and load again. Look at the startup screen to determine the version number.

Warning: ReDOS is not installed: the cache is wrong version or you don't have enough memory allocated.

Explanation: The ReDOS command editor shares its memory with the Disk Accelerator. You tried to load ReDOS without having the Disk Accelerator loaded at all, or you have an earlier version of the Disk Accelerator which cannot share memory in the same way, or you don't have enough memory allocated to the Disk Accelerator to allow it to share with ReDOS. Be sure you have the most recent version of Super PC-Kwik installed in your system and be sure you make the cache big enough to accommodate the memory needs of the RAM Disk, ReDOS, ReView, and the Print Spooler.

Warning: The Keyboard Accelerator is being loaded high by another program.

Explanation: A memory manager, such as 386LOAD, is trying to put the code for the Keyboard Accelerator into the Upper Memory Blocks. Let the Power Pak programs load themselves into high memory so there won't be any conflict and so you minimize the amount of high memory being used.

Sorry, resident version must be 3.00 or later to use the command editor.

Explanation: You are running a version of the Keyboard Accelerator which does not support the ReDOS command editor. The version of the Keyboard Accelerator is not the same as the version of Power Pak itself; to find out your version number for Power Pak, look on the diskette label. To find out the version numbers of the individual Power Pak programs, look at the start-up screen which displays when you load each program.

Screen Accelerator

/&U Unable to load into upper memory.

Explanation: You have requested that the Screen Accelerator move its code into Upper Memory Blocks but you do not have an XMS driver installed or there are not enough Upper Memory Blocks available to move the code. The code remains in conventional memory.

/A parameter ignored -- Advanced mode not available.

Explanation: Your system does not support the Screen Accelerator's Advanced mode; you either have a monochrome adapter or a color adaptor which is not compatible.

/A+ parameter ignored -- not valid in Generic mode.

Explanation: You loaded the Screen Accelerator in Generic mode, so the program code for Advanced mode was not loaded. You cannot switch to Advanced mode.

/C Sorry, no more space left in the table of Compatible files.

Explanation: You filled up the available table space for compatible file names. Leave this file out of the table, or unload and reload with a different set of files. You can have up to 30 files listed; 11 of these are already defined.

/C <file> already on list of Compatible files.

Explanation: The file you wanted to add to the list of compatible files is already on the list. It is not added.

/C <file> ignored -- file name too long.

Explanation: You specified a file name which is too long. You have a maximum of 8 characters for each compatible file name.

/R- ReView is not loaded. The Disk Accelerator is not loaded, no memory is available, or using an older version of PC-Kwik. ReView shares its memory with the Disk Accelerator.

Explanation: You tried to load ReView without having the Disk Accelerator loaded at all, or you have an earlier version of the Disk Accelerator which cannot share memory in the same way, or you don't have enough memory allocated to the Disk Accelerator to allow it to share with ReView. Be sure you have the most recent version of Super PC-Kwik installed in your system and be sure you make the cache big enough to accommodate the memory needs of the RAM Disk, ReDOS, ReView, and the Print Spooler.

/U Cannot unload -- Other programs above.

Explanation: You have other memory-resident programs loaded above the Screen Accelerator. Unload those programs first, then unload the Screen Accelerator.

/U The Screen Accelerator is not loaded. Cannot unload.

Explanation: You tried to unload the Screen Accelerator when it was not loaded.

/x Screen blanking not installed -- parameter ignored.

Explanation: You tried to specify the time after which your screen blanks, but you loaded the Screen Accelerator with the blanking feature disabled.

/x Unrecognized parameter.

Explanation: You used a parameter which is not valid for the Screen Accelerator. Use /? to see a list of valid parameters.

Cannot load Screen Accelerator; Super Pc-Kwik must be loaded first.

Explanation: You tried to load the Screen Accelerator without having the Disk Accelerator loaded. Since the Screen Accelerator shares memory with the Disk Accelerator, you must have the Disk Accelerator loaded before you load the Screen Accelerator. Load Super PC-Kwik, then re-load the Screen Accelerator.

Resident version incompatible -- please load new version.

Explanation: You tried to load an earlier version of the Screen Accelerator. Check to make sure you have installed the most recent version and load again.

Warning: The Screen Accelerator is being loaded high by another program.

Explanation: A memory manager, such as 386LOAD, is trying to put the code for the Screen Accelerator into the Upper Memory Blocks. Let the Power Pak programs load themselves into high memory so there won't be any conflict and so you minimize the amount of high memory being used.

The Screen Accelerator is disabled -- cannot change modes.

Explanation: You tried to change from Advanced to Generic or Generic to Advanced modes, but you previously disabled the Screen Accelerator. Re-enable the Screen Accelerator to change modes.

Print Spooler

Following are messages that the Print Spooler may display during invocation using the PCKSPL command:

/D Print Spooler already disabled. No action taken.

Explanation: You tried to disable the Spooler and it was already disabled.

/D Print spooler cannot be Disabled because data is still spooled.

Explanation: You tried to disable the Spooler while data is still spooled. You can only disable when there is no data spooled.

/E Print Spooler already enabled. No action taken.

Explanation: You tried to enable the Spooler when it was already enabled.

/I Printer not responding; Insert aborted.

Explanation: Your printer did not respond to the Spooler's attention signal and the Insert you requested was not done.

/I Invalid syntax for Insert command.

Explanation: You used the wrong syntax when sending characters to the printer using the Insert command at the command line prompt. Check Appendix D for details on correct parameter usage.

/R Print Spooler already Resumed. No action taken.

Explanation: You tried to resume using the Spooler but it was not suspended.

/S Print Spooler already suspended. No action taken.

Explanation: You tried to suspend the Spooler when it was already suspended.

/Z Cannot change Compression state because data is currently spooled.

Explanation: You tried to change between sending compressed and uncompressed data to the printer, but data is currently spooled. Wait until the currently spooled job is finished before changing the data compression parameter.

A Print Spooler with the Same hot key already loaded. Cannot load.

Explanation: You tried to load the Spooler when another copy of the program is already loaded using the same hot-key combination. Define a new hot-key combination for the second Spooler.

Cannot perform /P. Resident spooler is a different version.

Explanation: The version of the currently loaded Spooler is different from the version requesting the parameter summary. Use the latest version of the Spooler. This can happen when the Spooler is started from one subdirectory when the system is booted, but a different version of the Spooler is then run from a different subdirectory.

Cannot Unload -- Other programs loaded above.

Explanation: You tried to unload the Spooler while other resident programs are loaded above it in memory. You first must unload the programs which were loaded after the Spooler, and then unload the Spooler. If you do not need to recover the memory, try disabling the Spooler.

CAUTION: A second Print Spooler still installed.

Explanation: This is not an error; it is for your information. You have unloaded the second of two print Spoolers and one more remains loaded.

CAUTION: TWO Print Spoolers installed.

Explanation: This is not an error; it is for your information. You have loaded a second copy of the print Spooler.

Data still spooled. Timeout rate cannot be changed now.

Explanation: You tried to change the timeout value while data was still spooled.

Insert invalid. Print Spooler not yet installed.

Explanation: You tried to insert a FormFeed, a LineFeed, or a Reset but the Spooler is not yet loaded.

Invalid Serial printer parameter ignored: /C *n*

Explanation: You tried spooling to a serial printer, but the value *n* is invalid. The Spooler was not loaded.

No PC-Kwik cache memory left. Cannot load.

Explanation: Super PC-Kwik is loaded, but does not have enough memory for the Spooler to use. Probably most of the cache's memory has been reserved by the RAM Disk. You can reduce the size of the RAM Disk and reboot your system.

No PC-Kwik cache memory left. Cannot create pop-up box. Please try again.

Explanation: Super PC-Kwik is loaded, but does not have enough memory to create pop-up boxes. Probably most of the cache's memory has been reserved by the RAM Disk.

You can reduce the size of the RAM Disk and reboot your system.

Print Spooler already loaded.

Explanation: You tried to load the program when it is already loaded.

Print Spooler already loaded on the same device. Cannot load.

Explanation: You are loading the Spooler for a parallel or serial port when another copy of the program is already loaded for the same device.

Print Spooler not loaded. Cannot change state.

Explanation: You tried to disable, enable, suspend, or resume the Spooler when it was not yet loaded.

Print Spooler not loaded. Cannot flush data.

Explanation: You tried to use the /F parameter but the Spooler was not running.

Print Spooler not loaded. Cannot unload.

Explanation: You tried to unload the Spooler but it is not yet loaded.

Print Spooler not loaded. No measurements available.

Explanation: You requested measurements from the Spooler but it is not running. You can only display measurements when the Spooler is running.

Print Spooler now Disabled. Cannot Insert data to printer.

Explanation: You tried to Insert data to the Spooler when the program is disabled.

Requested device not present in the system. Cannot install.

Explanation: You requested a device name which is not valid for your particular system. Check the /L or /C parameter values and your system documentation.

Requires PC-Kwik Disk Accelerator Version 2.0 or above.

Explanation: The Super PC-Kwik Disk Accelerator currently loaded in your system is an earlier version. Replace it with the most recent version.

Resident Spooler a different version. Cannot Unload.

Explanation: The version of the currently loaded Spooler is different from the version trying to unload. Use the latest version of the Spooler. This can happen when there are two or more copies of the Spooler, usually in different subdirectories. Check the version number that displays in the startup screen.

Serial characteristics are left as initialized by DOS.
You may need to use the MODE command to redefine serial characteristics.

Explanation: This is a warning message, not an error. It displays whenever you ask to have your output redirected to a COM port but you do not specify any of the serial characteristics using the subparameters of /C. Your port characteristics are determined by the DOS MODE command.

Serial Port Initialization Error. 19,200 baud not supported by BIOS.

Explanation: You have specified a baud rate of 19200 baud for a serial printer, but your BIOS does not support initialization of this baud rate.

Spooler not supported by this version of the PC-Kwik Disk Accelerator.

Explanation: The PC-Kwik Disk Accelerator loaded is a version which does not support the Spooler's functions. Consult your manufacturer or dealer.

TWO PC-Kwik Print Spoolers already installed. Cannot install three.

Explanation: You tried to load a third Spooler when two copies of the program are already loaded. The maximum number you may load is two.

Unable to load into Expanded memory.

Explanation: You requested that the Spooler move its program code into expanded memory using /&A+, but your system does not have expanded memory hardware or software, or no more expanded memory is available. Load the Spooler without specifying the type of memory and let it determine the best type of memory to use.

Unable to load into High memory.

Explanation: You requested that the Spooler move its program code into UMBs using /&U+, but your system does not have UMBs available or you have no memory manager to access those blocks. Load the Spooler without specifying the type of memory and let it determine the best type of memory to use.

Unrecognized parameter ignored: */x*

Explanation: You used an invalid parameter character. Use /? for a list of available parameters for the Spooler.

WARNING: /H- Overrides use of /A.

Explanation: You specified no keyboard handler and an alternate hot key. You cannot use these two options together. The Spooler was loaded but the /A parameter was ignored; the hot key is <Shift><Shift><PrintScrn>.

WARNING: Incompatible display adapter. Cannot detect Graphics modes.

Explanation: The Spooler has detected that you have a Hercules adapter card but it suspects the card may not be reliable. The Spooler is unable to use graphics modes for your display and thus cannot pop up a video display window. You can still control the Spooler from the DOS prompt line.

Warning: The Spooler is being loaded high by another program.

Explanation: A memory manager, such as 386LOAD, is trying to put the code for the Spooler into the Upper Memory Blocks. Let the Power Pak programs load themselves into high memory so there won't be any conflict and so you minimize the amount of high memory being used.

WARNING: Serial device failed to respond.

Explanation: You tried to load the program using a serial printer which currently is not connected properly to the system. The Spooler was loaded successfully, but you need to activate your printer before doing any printing.

You may not specify Single-Sheet mode (/BS) without a hot-key.

Explanation: You tried to load the Spooler in Single-Sheet printing mode but requested no hot-key support. You must have a hot key when using Single-Sheet mode. The Print Spooler did not load.

Run-Time Status Messages

These are normal *status* messages displayed on the Status line of the pop-up display. These are not error conditions.

MEMORY FULL. WAITING FOR PRINTER

Explanation: The Spooler has filled its available memory and now is waiting for memory to be freed up by printing.

** NO DATA SPOOLED **

Explanation: The Spooler is currently inactive. There are no requests to print data.

** OUTPUT PAUSED AT USER REQUEST **

Explanation: You inserted a Pause into the print data with the Insert-Reset function. The Spooler has printed all data it received before the Pause and has suspended printing. Select Resume from the print control menu to continue printing.

** PRINTING SUSPENDED **

Explanation: The Spooler currently has data spooled for printing and has temporarily paused the printing process while the pop-up display is in use.

** SPOOLER DISABLED **

Explanation: The Spooler is disabled. Any data sent to the printer is being passed on to the original printer handler, without spooling. You may enable the Spooler using the Enable option of the pop-up menu.

** WAITING FOR PAPER CHANGE **

Explanation: The Spooler is currently printing in Single-Sheet mode and has finished sending a page to the printer. Put a new piece of paper in the printer, and select Resume from the control menu to continue printing.

Run-Time Error Messages

These messages may be displayed in the Status line because of printing errors.

** PRINTER ERROR = I/O ERROR **

Explanation: Your printer is not responding. This error may occur when the printer is not powered on or is not working properly.

** PRINTER ERROR = OFF-LINE **

Explanation: Your printer is not connected properly or is offline. Check the Online or Select switch on your printer, and make sure all the cables are connected securely.

** PRINTER ERROR = OUT OF PAPER **

Explanation: Your printer has run out of paper. Add paper.

** PRINTER ERROR = TIMEOUT **

Explanation: Your printer did not respond within a reasonable amount of time to the output of data. This can happen particularly with laser printers. You may wish to adjust the length of the timeout.

Appendix I

TROUBLESHOOTING & TECHNICAL SUPPORT

Following are some suggested steps you can take if you observe an unexplained symptom while using the Power Pak programs. You may need to edit files to change the way programs are invoked in your system. Appendix F gives information on how to edit ASCII files.

1. *Review the appendices that have information on hardware and software supported*

   These appendices contain information which may pertain to your hardware and software configuration.

2. *Review the READ.ME files*

   The READ.ME files placed in your \PCKWIK subdirectory by the INSTALL routine contain some additional information about possible hardware and software restrictions.

3. *Unload Power Pak*

   There is a chance that the symptom you have observed is unrelated to the Power Pak programs. Reboot your system without the software or unload the programs with POWEROFF.

   If the symptom persists after unloading you can be relatively sure that the problem is unrelated to the Power Pak programs. You may still find the following subsections useful in tracking down the problem, however.

If the symptom disappears after you have removed the Power Pak programs from memory, back up your hard disk, re-install the programs and proceed to the next step.

4. *Change the memory type used for the cache*

When a symptom appears, it is helpful to know whether it also appears when the cache is loaded using a different memory type. To change the memory type, you may need to add a /A+, /E+, or /C+ to the SUPERPCK invocation line. See Section 3 for information on these parameters. If you are loading the cache automatically each time you boot your computer, the SUPERPCK line is in your AUTOEXEC.BAT or POWERON.BAT file.

If the symptom only appears when using expanded memory, we suggest the following:

a. Make sure the expanded memory manager conforms to the LIM specifications. Most EMMs do, but often older versions have bugs or incomplete implementations of the LIM specs. Call your computer vendor for an update of your memory manager if necessary. *Note:* The EMM vendor may find it useful to know that Super PC-Kwik uses function 15 of the LIM 3.2 specification or function 16 of the LIM 4.0 specification. Note that you must use LIM 4.0 for Super PC-Kwik to be able to lend expanded memory to other applications.

b. Run the expanded memory manager's installation program and/or check the manager's manual to be certain the manager is installed correctly.

c. Go on to the next step.

If the symptoms appear only in extended memory, then we suggest the following:

a. Remove other programs from your system that use extended memory. If the problem goes away, then load the programs back in one at a time until the problem reoccurs. You may need to use Super PC-Kwik's /Ex:*nnnnn* parameter or a similar parameter with your other extended memory applications.

   If you have Microsoft Windows, you may have a copy of HIMEM.SYS. This driver acts as an extended memory manager. If you have this driver, try adding the following line to your CONFIG.SYS file:

   ```
   DEVICE=HIMEM.SYS
   ```

   Notes: (1) This line assumes that the HIMEM.SYS file is in the root directory of your boot disk. (2) If you are using Qualitas' 386MAX version 4 or Quarterdeck's QEMM version 5.0, HIMEM should not be necessary as its functions are included.

b. Call Technical Support (see Step 9).

If the symptoms occur when using conventional memory for the cache or occur with more than one memory type, go on to the next subsection.

5. *Change some of the Power Pak's parameters*

Review the parameters to determine if any need to be changed. If you are loading the Power Pak programs automatically each time you boot your computer, the parameters

should be added or changed in your AUTOEXEC.BAT file or in the POWERON.BAT file.

a. Change the options for Super PC-Kwik. Try loading with the following combination. If the cache loads with no problems with these options, then unload Super PC-Kwik and reload, removing one parameter at a time until Super PC-Kwik fails. The options are:

   /H- /D- /B- /T- /L- /&U-

b. Change the options for the Spooler. Try loading with the following combination. If the cache loads with no problems with these options, then unload Super PC-Kwik and reload, removing one parameter at a time until Super PC-Kwik fails. The options are:

   /C /L:2 /L# /H- /K-

c. Try adding these options to the Screen Accelerator:

   /R*, /A-, /X

d. Try adding this option to the Keyboard Accelerator: /K-

Refer to the appropriate sections of this manual for specific information on the parameters. If you do not obtain satisfactory results, the next step is to determine if the problem is caused by an interaction with some other program in your system. Proceed with the next step.

6. *Simplify your AUTOEXEC.BAT file*

Check the root directory of your boot disk for a batch file called AUTOEXEC.BAT. If you find it, display its contents. Any resident programs you are using are usually listed in this file. Use an editor such as EDLIN to convert these lines into comments by inserting the letters REM and a space in front of

each line to temporarily disable its execution. For example, if you had Sidekick running automatically, you could keep it from starting like this:

```
VERIFY OFF
PATH  C:\DOS;C:\PCKWIK
PROMPT  $P$G
REM  \SKPLUS\SKPLUS
```

The last command line does not execute but is easy to put back later.

You may want to use this technique to temporarily remove some of the Power Pak programs. Edit your AUTOEXEC.BAT file or the POWERON.BAT file.

Once you have saved the modified batch file back to disk, reboot your system. If the symptom still occurs, go on to the next step. If you find the symptom you previously observed has disappeared, add back one resident program at a time until you identify which program is causing the conflict.

7. *Simplify your CONFIG.SYS file*

Check the root directory of your boot disk for a file called CONFIG.SYS. This file may contain device drivers. While you need an expanded memory driver to use the /A+ option of Super PC-Kwik, other device drivers may not be required for the basic operation of your system. Use an editor such as EDLIN to convert them to remarks using REM<Space> at the beginning of the line.

Note: These commented lines may give you error messages when you reboot your system, but it is easier to replace the commands once you are done testing.

Once you have saved the updated CONFIG.SYS file back to disk, reboot your system so that the revised list of drivers is used.

If the problem still occurs, go on to the next step. If you find that the symptom you previously observed has disappeared, add one device driver at a time back into your system until you determine which driver is causing the problem.

8. *Run Power Pak on another system*

If you have access to another similar personal computer, try running Power Pak on it. If the symptom does not occur on this system, consider the differences between the two systems. Consider in particular, differences such as memory and disk configurations.

9. *Call Technical Support for assistance*

You may wish to call Technical Support now. See the inside front cover for the telephone number. Please be prepared with as much of the following information as possible:

1. The results of the above tests.
2. The version number of your Power Pak program. Look on your diskette label. You can also look at the startup screens for each of the programs to find the version number of each program within Power Pak.
3. Names and version numbers of other resident programs you are using.
4. Your computer type, processor type, and BIOS version.
5. The amount and type of memory you are using.
6. If you are using an expanded memory manager, its type and version.
7. The version of DOS you are running.

8. Your hard disk brand, model and size.
9. Your hard disk controller brand and model.
10. Your hard disk partitions and sizes.
11. The brand and version of hard disk partitioning software you are using.
12. The contents of your CONFIG.SYS and AUTOEXEC.BAT files.

Appendix J

USING UPPER MEMORY BLOCKS OR EXPANDED MEMORY FOR PROGRAM CODE

The Power Pak programs are designed to automatically save as much conventional memory as possible. They do this first by sharing memory with the Super PC-Kwik disk cache; when each program needs memory, it shares the memory you already allocated to the cache buffers instead of using additional memory. Since you can use the cache in extended or expanded memory as well as in conventional memory, the Power Pak programs use whichever sort of memory you have assigned to the cache buffers.

Each Power Pak program also saves conventional memory by moving some or all of its program code out of conventional memory. It moves into either expanded memory (conforming to LIM 3.2 or above) or into Upper Memory Blocks (UMBs, or memory above the normal DOS limit of 640K bytes but below the 1-Mbyte boundary).

How much code it can move and where it moves it to depends on your system's configuration. The program checks your system and detects what memory and drivers are available. It automatically configures itself to save as much conventional memory as is possible on your particular machine. The details of what you need on your system to save memory are described below; check the section for the type of system you have to find out what hardware and software you need to take advantage of this feature. A chart summarizing the information for each type of system follows at the end of the Appendix.

Note: Normally, the Power Pak programs automatically determine whether your system configuration fits these criteria. You do not need to specify any parameters to take advantage of these memory-saving features.

PC or XT Class Systems Based on the 8088 Processor

Most systems based on the 8088 processor do not provide UMB memory, so the Power Pak programs cannot move any of their code there. If you have a fully hardware-compatible EMS 4.0 memory board, and you have a memory manager such as Move'em which can address the UMBs on such a board, your Power Pak programs may be able to move some of their code into the UMBs.

If you have an expanded memory board installed, such as AboveBoard, and you are running an expanded memory manager which conforms to the LIM 3.2 Expanded Memory Specification (EMS) or above, each Power Pak program can save some conventional memory by moving most of its program code into the expanded memory. Note that the Super PC-Kwik Disk Accelerator program must move its own code into expanded memory before the other Power Pak programs can move their code up.

80286-Based Processors

Most systems based on the 80286 processor do not provide UMB memory. If you have a fully hardware-compatible EMS 4.0 memory board, and you have a memory manager such as Move'em which can address the UMBs on such a board, your Power Pak programs may be able to move some of their code into the UMBs.

You can also use the UMB space if you have one of a few particular chip sets (such as the NEAT chip set from Chips and Technologies). If you have such a chip set, and you also have an eXtended Memory Specification (XMS) driver such as QRAM or Move'em, installed in your system, your programs may be able to move some of their code into the UMBs. See the documentation with your XMS driver to determine which particular chip sets can be used.

The UMBs must be free and available for use; you can use a memory analysis tool such as PCKMAP to find out if any blocks of upper memory are available. The PCKMAP utility is included with Power Pak.

If the Power Pak programs detect that your system is equipped to address UMBs, they move all of their program code into the UMBs to free up as much conventional memory as possible.

If upper memory is not available, the programs try to move some of their code into expanded memory. You must have an expanded memory board such as AboveBoard installed and you must have an expanded memory manager which conforms to the LIM EMS 3.2 or 4.0 specification. If you do, the Power Pak programs load most of their code into expanded memory to save using conventional memory. Note that the Super PC-Kwik Disk Accelerator program must move its own code into expanded memory before the other Power Pak programs can move their code up.

If you have an 80286 with extended memory, you could install an expanded memory simulator, such as AboveDisk. However, we don't recommend installing any of the Power Pak programs in this simulated expanded memory, since the simulator slows down

their performance considerably and reduces the benefit of using the tools.

If neither upper nor expanded memory is available, the Power Pak programs load and run from conventional memory. You can minimize the memory used by turning off some features, such as the hot-key pop-up menu for the Spooler, or the ReDOS feature for the Keyboard Accelerator. See the Appendix covering advanced use of each program for details on how to turn off individual features.

80386- or 80486-Based Processors

If you have an 80386-based computer (or an 80486, which accesses memory in the same way as the 80386), the code for the Power Pak programs can be moved into either UMBs or expanded memory.

To use UMBs, you must have an XMS driver which can access upper memory, such as QEMM or 386MAX, installed in your system. The UMBs must be free and available for use; you can use a memory analysis tool such as PCKMAP to find out if any blocks of upper memory are available. The PCKMAP utility is included with Power Pak.

Note: The HIMEM.SYS driver, while an XMS driver, cannot access UMBs and therefore won't support this feature, although the Power Pak programs are fully functional with HIMEM.SYS.

If upper memory is available and you have an XMS driver, then all of the program code which would normally reside in conventional memory is moved to upper memory, freeing up the conventional memory for other applications.

If upper memory is not available, each program tries to move some of its code into expanded memory. If you have an expanded memory board, or if you have extended memory on your 80386 and emulate expanded memory using an expanded memory manager such as QEMM or 386MAX, the Power Pak programs load most of their code into expanded memory to save using conventional memory. Note that the Super PC-Kwik Disk Accelerator program must move its own code into expanded memory before the other Power Pak programs can move their code up. If both UMBs and expanded memory are available, the Power Pak programs first try to load into the UMBs. If that fails, they then try to use expanded memory.

If neither upper nor expanded memory is available, the Power Pak programs load and run from conventional memory. You can minimize the memory used by turning off some features, such as the hot-key pop-up menu for the Spooler, or the ReDOS feature for the Keyboard Accelerator. See the Appendix covering advanced use of each program for details on how to turn off individual features.

Summary: Code Hiding & Memory Lending for Super PC-Kwik

This table summarizes the combinations of processor type, memory type, and memory management software that you may have in your system, and shows which sorts of memory can be used for which parts of the disk cache and whether the cache can lend that memory to other applications. Note that the cache always shares the memory allocated to its cache buffer with the Power Pak programs, no matter which sort of memory is used for the cache buffer.

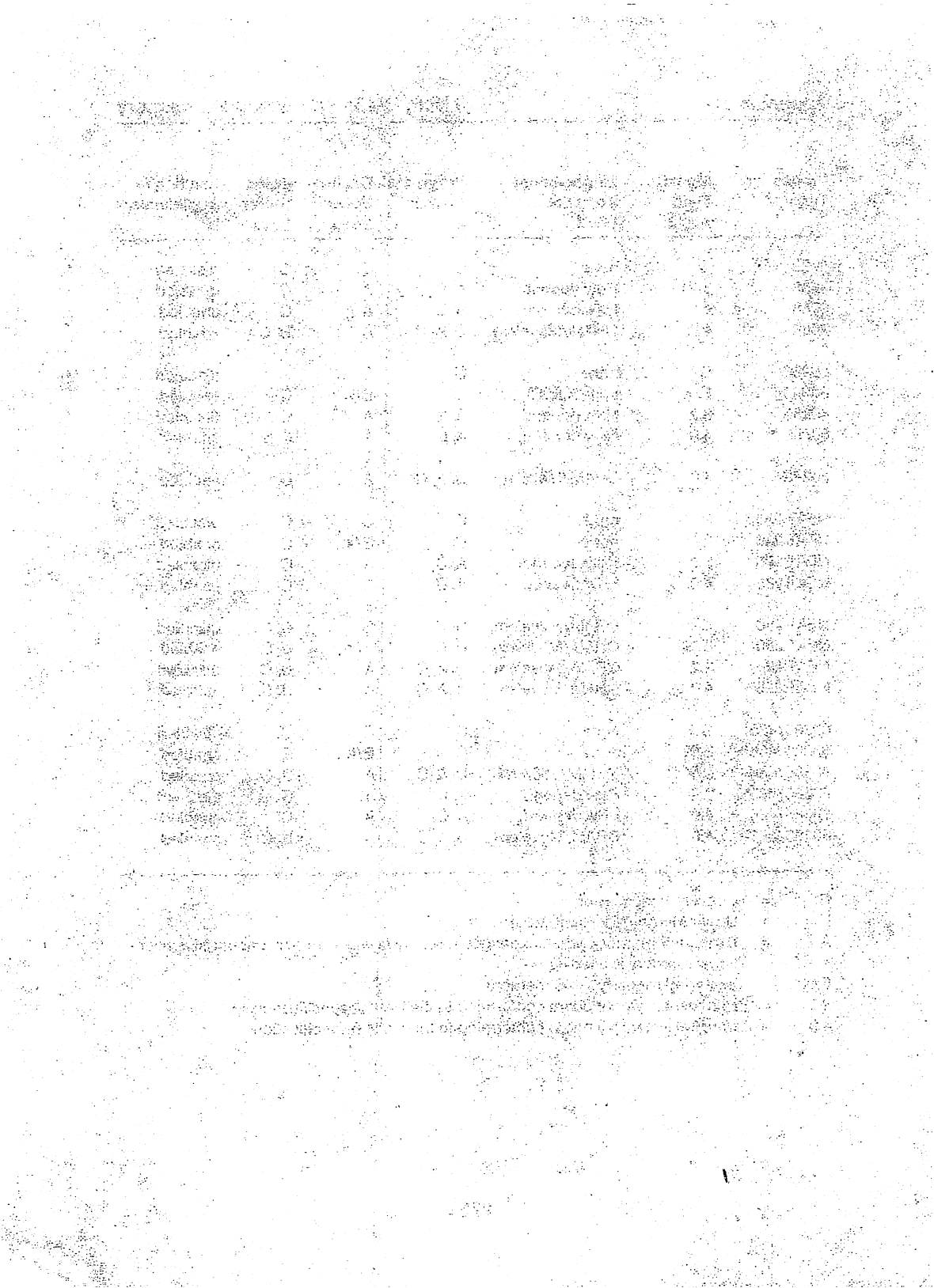
When more than one type of memory is listed, the programs attempt to use memory in the order listed; i.e., "U, C" means it first tries to load in UMBs and if that doesn't work, it uses conventional memory.

Under *Management Software Used*, we list QRAM, Move'em, QEMM, and 386-to-the-MAX. While these are not the only memory management drivers available, we don't have room in the table to list all the possible options; if your driver is fully compatible with these drivers, the results should be the same.

Under *Processor Type*, we noted the use of NEAT chipsets from Chips and Technologies as one option. Again, we don't have room to list all possible options. Check your memory management driver for details as to what is compatible.

Processor Type	Memory Type Avail.	Management Software Used	Program Code is in	Cache Buffer Uses	Track Buffer Uses	Lending to Applications is
8088	C	none	C	C	C	disabled
8088	3.2	Hdw depend.	A, C	A	C	disabled
8088	4.0	Hdw depend.	A, C	A	C	enabled
8088	4.0	QRAM/Move'em	U, A, C	A	U, C	enabled
80286	C	none	C	C	C	disabled
80286	E/X	none/QEXT	C	E/X	C	enabled
80286	3.2	Hdw depend.	A, C	A	C	disabled
80286	4.0	Hdw depend.	A, C	A	C	enabled
80286	4.0	QRAM/Move'em	U, A, C	A	U, C	enabled
NEAT 286	C	none	C	C	C	disabled
NEAT 286	E/X	none	C	E/X	C	enabled
NEAT 286	3.2	Hdw depend.	A, C	A	C	disabled
NEAT 286	4.0	Hdw depend.	A, C	A	C	enabled
NEAT 286	C	QRAM/Move'em	U, C	C	U, C	disabled
NEAT 286	E/X	QRAM/Move'em	U, C	E/X	U, C	enabled
NEAT 286	3.2	QRAM/Move'em	U, A, C	A	U, C	disabled
NEAT 286	4.0	QRAM/Move'em	U, A, C	A	U, C	enabled
80386/486	C	none	C	C	C	disabled
80386/486	E/X	none	C	E/X	C	enabled
80386/486	E/X	QEMM/386MAX	U, A, C	A	U, C	enabled
80386/486	3.2	Hdw depend.	A, C	A	C	disabled
80386/486	4.0	Hdw depend.	A, C	A	C	enabled
80386/486	4.0	QRAM/Move'em	U, A, C	A	U, C	enabled

C = Conventional memory
U = Upper Memory Blocks (UMBs)
A = Expanded memory (when expanded memory is used, a small amount of conventional memory is used as well)
E/X = Extended memory/XMS memory
3.2 = Hardware memory board conforming to the LIM 3.2 specification
4.0 = Hardware memory board conforming to the LIM 4.0 specification



PARAMETER SUMMARY

Super PC-Kwik Disk Accelerator Parameters

While Loading

/-d	Do not cache drive *d.* **Default:** Cache all but RAM disks & remote network drives.
/&U-	Do not load into UMBs. **Default:** /&U+ if UMBs available.
/*	Show cache hits. **Default:** /*-
/A+	Expanded memory for cache buffer. **Default:** /A+ if expanded memory manager running and no other memory type specified.
/C+	Conventional memory for cache buffer. **Default:** /C+ if no expanded or extended available and no other memory type specified.
/EM	Extended memory for cache buffer, minimize conventional memory use.
/EP	Maximize performance using more conventional memory when cache buffer in extended memory. **Default:** /EM if no expanded available and no other memory type specified.
/E*x*:*nnnnn*	Extended memory above address *nnnnn*K for cache buffer; *x* is M or P as above. **Default:** /EM:1024
/B+	Batch copy. **Default:** /B+
/D+	Advanced support for diskette drives. **Default:** /D+ for IBM PC, XT, AT, PS/2s, and compatibles; /D- for others.
/H+	Advanced support for hard disks. **Default:** /H+ for AT, 386, PS/2s, and compatibles; /H- for others.
/O+	Optional algorithm for advanced support. **Default:** /O-
/G+	Use disk boot sector information. **Default:** /G+
/K+	Pause after issuing warning messages. **Default:** /K+
/L:*nnn*	Enable lending of up to *nnn*K bytes. **Default:** 1/2 amount available after reserving for RAM Disk.
/L-	Disable lending.

/M-	Disable measurement pop-up box. **Default:** /M-
/M+	Enable measurement pop-up box with <Shift><Shift>.
/M1	Enable measurement pop-up box with <Alt><Shift>.
/M2	Enable measurement pop-up box with <Ctrl><Alt><Shift>.
/P+	Display parameter settings. **Default:** /P+
/Q+	Quickly return DOS prompt. **Default:** /Q-
/R:*nnnnn*	Reserve *nnnnn*K bytes for other programs. **Default:** /R:480 for conventional, /R:0 for others; see /L.
/S:*nnnnn*	Allocate *nnnnn*K bytes for cache buffer. **Default**: See /L
/T-	Disable reading complete tracks.
/T+	Read complete tracks, buffer size = 17 sectors. **Default:** /T+
/TL	Read complete tracks, buffer size is largest track on your system.
/T:*nn*	Perform track reads of *nn* sectors; maximum is 72.
/V+	Use volume-change detection hardware. **Default:** /V+
/W+	Suppress redundant writes. **Default:** /W+
/X+	Use protocols for DOS v3.2 and earlier. **Default:** Depends on DOS version
/?	Display parameter summary.

While Running

/D	Disable but leave in memory.
/E	Enable if previously disabled.
/F	Flush cache, reset measurements.
/M	Display cache measurements.
/U	Unload Super PC-Kwik.
/P	Display parameters in effect.
/?	Display parameter summary.

RAM Disk Parameters

/D:*nnnnn*	Maximum directory entries. **Default:** /D:64
/S:*nnnnn*	Maximum size. **Default:** /S:128

Keyboard Accelerator Parameters

While Loading

/&*x*	Choose type of memory to load code into. *X* = U (upper), A (expanded) or C (conventional). Use /&U- or /&A- to prevent loading into upper or expanded. **Default:** /&U if XMS driver installed, UMBs available; /&A if expanded memory manager installed, expanded memory available; otherwise /&C.
/A+	Audio active. **Default:** /A+
/C+	Copy commands. **Default**: /C-
/F*x*:*name*	Use command list startup file *name*; *x* is A (append *name* to buffer), R (replace buffer with *name*), or S (save buffer to *name*). **Default:** Append file named REDOS.FIL in current directory or subdirectory you started PCKKEY in to buffer.
/H	Display list of hot-key commands.
/K+	Accept hot-key commands. **Default:** /K+
/I+	Instantaneously accelerate. **Default:** /I-
/L:*nn*	Set minimum number of characters for commands kept in list. **Default:** /L:2
/M+	Enable ReDOS.
/M-	Disable ReDOS.
/M:*n*	Set ReDOS mode; *n* is 0 (disable ReDOS), 1 (enable, overwrite mode, normal cursor), 2 (enable, overwrite mode, fat cursor) 3 (enable, insert mode, normal cursor), or 4 (enable, insert mode, fat cursor). **Default:** /M:1
/R*n*A	Repeat rate = *n**9 cps for all keys. **Default:** /R3A
/R*n*S	Repeat rate = *n**9 cps for special keys.
/S:*xyz*:	Add special keys *x, y* and *z*. **Default:** /S::
/T*n*A	Response time = *n**55 ms for all keys.
/T*n*C	Response time = *n**55 ms for cursor keys. **Default:** /T4C
/T*n*S	Response time = *n**55 ms for special keys.
/V+	Standard video attributes. **Default:** /V+
/V-	Alternate attributes.
/VB	Monochrome for color systems.
/W:*rr,ccc*	ReDOS window size; *rr* = number command lines, *ccc* = number characters per line. **Default:** /W:13,40
/X+	Enable ReDOS pop-up window.
/X:*rr,cc*	Location of ReDOS window upper left corner. **Default:** /X:0,255

/P+	Display parameter settings. **Default:** /P+
/Z:*nn*	Size of command list in K bytes 1 < *nn* < 99. **Default:** /Z:2
/?	Display parameter summary.

While Running

/1+	Spreadsheet mode.
/1-	Normal mode.
/D	Disable but leave in memory.
/E	Enable if previously disabled.
/C	Copy commands.
/F*x*:*name*	Use command list startup file *name*. *X* = A, R, S
/L:*nn*	Set minimum number of characters for commands kept in list.
/H	Display hot-key commands.
/M:*n*	Set ReDOS mode; *n* is 0 (disable ReDOS), 1 (enable, overwrite mode, normal cursor), 2 (enable, overwrite mode, fat cursor) 3 (enable, insert mode, normal cursor), or 4 (enable, insert mode, fat cursor).
/V+	Standard video.
/V-	Alternate video.
/VB	Monochrome on color systems.
/W:*rr,ccc*	ReDOS window size.
/X+	Enable ReDOS pop-up window.
/X:*rr,cc*	Change ReDOS window location.
/P	Display parameters.
/U	Unload.
/Z:*nn*	Reset command list size.
/?	Display parameter summary.

Hot Keys

<Alt>+	Increase repeat rate.
<Alt>-	Decrease repeat rate.
<Alt><Ctrl>+	Response time faster.
<Alt><Ctrl>-	Response time slower.
<Alt><Ctrl>1	Toggle spreadsheet mode/normal mode.
<Alt><Ctrl>2	Toggle on/off.
<Alt><Ctrl>3	Toggle hot keys.

Screen Accelerator Parameters

While Loading

/&*x*	Choose type of memory to load code into. *X* is U (upper), A (expanded) or C (conventional). Use /&U- or /&A- to prevent loading into upper or expanded. **Default:** /&U if XMS driver installed, UMBs available; /&A if expanded memory manager installed, expanded memory available; otherwise /&C.
/A+	Advanced mode. **Default:** /A+ color, /A- monochrome.
/C:*name*	Specify compatible file name.
/C*	Display list of compatible programs.
/B+	Enable screen blanking.
/B:*nn*	Set blanking idle time of *nn* minutes 1 < *nn* < 60. **Default:** /B:5
/K+	Enable hot key if blanking enabled.
/KAC:*x*	Enable hot-key blanking with <Alt> <Ctrl>*x*.
/KAS:*x*	Enable hot-key blanking with <Alt> <Shift>*x*. **Default:** /KAS:B
/R+	Enable ReView with <ScrollLock>. **Default:** /R+
/R*	Enable ReView with <Alt><ScrollLock>.
/S:*nnn*	Up to *nnn*K bytes for ReView buffer. **Default:** /S:16
/W+	Unblank screen on program writes. **Default:** /W-
/P+	Display parameter settings. **Default:** /P+
/Q+	No snow problems. **Default:** /Q- for CGA monitors, /Q+ for all others.
/?	Display parameter summary.

While Running

/A+	Switch to Advanced mode.
/C:*name*	Add compatible file name to list.
/C*	List compatible file names.
/B+	Enable screen blanking.
/B:*nn*	Enable screen blanking, idle time = *nn* minutes; 1 < *nn* < 60.
/K	Enable hot-key blanking.
/KAC:*x*	Enable hot-key blanking with <Alt> <Ctrl>*x*.
/KAS:*x*	Enable hot-key blanking with <Alt> <Shift>*x*.
/W+	Unblank screen on program video writes.
/D	Disable but leave in memory.

/E Re-enable after disabling.
/F Flush the ReView video buffer.
/P Show current parameter settings.
/S:*nnn* Change size of ReView buffer.
/U Unload and remove from memory.
/? Display parameter summary.

Print Spooler Parameters

While Loading

/&*x* Choose type of memory to load code into. *X* is U (upper), A (expanded) or C (conventional). Use /&U- or /&A- to prevent loading into upper or expanded. **Default:** /&U if XMS driver installed, UMBs available; /&A if expanded memory manager installed, expanded memory available; otherwise /&C.
/AC:*x* Redefine hot key to Ctrl><Shift>*x*.
/AS:*x* Redefine hot key to <Alt><Shift>*x*. **Default:** <Alt><Shift>-<PrintScrn>
/H+ Enable configurable hot-key. **Default:** /H+
/H- The only hot keys are <Shift><Shift><PrintScrn> and <Shift><CapsLock><PrintScrn>.
/K+ Activate hot key. **Default:** /K+
/BP:*nnn* Auto Page-Break mode on, pages = *nnn* lines.
/BS:*nnn* Single-Sheet mode on, pages = *nnn* lines. **Default:** No special pagination
/C:*n* Output to serial printer COM*n*, *n* = 1, 2 or 3. **Default**: None
/L:*n* Use parallel printer with interrupts; *n* is 1, 2 or 3. **Default**: /L:1
/L#*n* Use parallel printer without interrupts; *n* is 1, 2 or 3.
/G+ Support pop-up boxes in graphics video modes. **Default**: /G+
/G# Spooler pop-up for certain VGA systems. **Default:** Normal VGA
/I+ Support Insert String and Modify from pop-up box. **Default**: /I+
/Q+ Query before sending control characters. **Default:** /Q+
/J+ Output to the printer through BIOS. **Default:** /J-
/N+ Enable DOS idle; /J+ implies this. **Default:** /N- unless /J+
/O:*n* Output rate (0-9). **Default:** /O:1
/T:*nn* Timeout value (0-99). **Default:** /T:1
/V+ Normal pop-up colors. **Default:** /V+
/VB Monochrome pop-up for color monitor and adapter.
/W+ Display all warning messages. **Default:** /W+

/W# Display all warning messages except Timeout.
/W- Suppress all warning messages.
/X:*rr,cc* Position of pop-up box; *rr* = 0-17, *cc* = 0-40. **Default:** /X:0,0
/P+ Display parameter settings. **Default:** /P+
/? Display parameter summary.

While Running
/1 Act on first Spooler.
/D Disable but leave in memory.
/E Enable after disabling.
/F Flush spooled data, reset measurements.
/IF Send Form Feed.
/IL Send Line Feed.
/IR Reset immediately.
/M Display measurements.
/O:*n* Output rate (0-9).
/T:*nn* Timeout value (0-99).
/R Resume printing if suspended.
/S Suspend printing until next Resume.
/U Unload from memory.
/P Display parameters.
/? Display parameter summary.

BENCHPCK Parameters

To run the BENCHPCK benchmarking program, use the RUNBENCH batch file included with Power Pak. The syntax is:

RUNBENCH *d*: /*s*:*n* /*x*

d drive letter on which to run the benchmark test
s size of the test file:
/P 256K byte file 1 pass
/S 256K byte file 3 passes
/M 1M byte file 2 passes
/L 2M byte file 1 pass
n number of passes to run the test; 1 < *n* < 9
x optional parameters for Super PC-Kwik
Default: RUNBENCH /P:1 on the DOS default drive

PCKMAP Parameters

/X- Turn off the search for XMS handles when reporting memory usage. /X+ searches for XMS handles. **Default:** /X+

GLOSSARY

Advanced Mode (Screen Accelerator)
: The fastest mode used by the Screen Accelerator and the default for CGA, EGA, and VGA color adapters.

Advanced Support (Super PC-Kwik)
: The feature of Super PC-Kwik that provides an increase in the performance of writing to and reading from disks. This feature is controlled by the /D and /H parameters for diskette and hard disk, respectively.

Back Slash (\)
: The delimiter that DOS uses to separate directory names and file names.

Baud rate
: The rate a serial device can send data to another serial device.

Bernoulli Drives
: A cartridge drive system supplied by Iomega Corporation. The Bernoulli cartridges are high-capacity removable media.

Cache
: A collection of recently used disk sectors kept in Random Access Memory (RAM). Caching speeds access to data on the disk.

Conventional Memory

The memory directly addressable by DOS applications. This memory is limited to 640K bytes.

Cursor

An indicator mark on a video screen that indicates where characters appear when typed from the keyboard. Cursors usually are horizontal underline characters or solid block characters and usually blink. In many applications the cursor can be moved on the screen using the arrow keys just to the right of the main part of the keyboard.

Disk

Mass storage device for your computer. Hard disks are permanently installed; floppy disks (or diskettes) can be removed and stored elsewhere.

Disk Accelerator

See *Cache*

Expanded Memory (EMS)

Memory that conforms to the Lotus/Intel/Microsoft Expanded Memory Specification either version 3.2 or 4.0. This specification describes a technique that allows memory above the normal 640K limit to be added to IBM PCs and compatibles. The related Enhanced Expanded Memory Specification, published by AST Research, Quadram, and Ashton-Tate describes a superset of the LIM Expanded Memory Specification. Memory which conforms to the Enhanced specification is also supported by Super PC-Kwik.

Extended Memory

Memory on an IBM AT or equivalent that is directly addressable by an 80286, 80386 or 80486 processor but is above the memory address normally accessible by programs running under DOS. From a hardware point of view this memory begins at location 1024K, which is sometimes referred to as the 1-megabyte boundary.

Forward Slash (/)

The delimiter that the Power Pak programs use to separate command parameter options.

Generic Mode (Screen Accelerator)

A somewhat less aggressive video acceleration. The default mode for standard monochrome and Hercules adapters. Generic mode uses slightly less program memory than Advanced Mode.

Generic Support (Super PC-Kwik)

Normal caching of drives without using Super PC-Kwik's advanced writing and reading techniques. See Advanced Support.

Hot Key

A combination of keys which may be used to activate a resident program such as the Print Spooler or the Keyboard Accelerator. Hot keys can be used from the DOS prompt or from within most applications. Generally the <Alt> or <Ctrl> keys are used at the same time one or more other keys are pressed.

Install

The process of moving a program and related files from distribution media, such as a diskette, to disk storage, either hard disk or floppy diskette. When you install Power Pak, you also create the \PCKWIK subdirectory.

Lend

The process wherein Super PC-Kwik monitors requests from other application programs for expanded or extended memory, and gives up some of the memory allocated to its cache buffers when the other programs request memory. When the other applications are finished, Super PC-Kwik returns the memory to its cache buffer allocation.

Load

The process of moving a program from disk storage to your computer's memory so it can run. Unloading a program removes the program from your computer's memory; it can no longer run.

Parameters

Options to change the way the Power Pak programs run on your computer. Each parameter is specified by one or more characters preceded by a forward slash (/).

RAM Disk

A section of Random Access Memory (RAM) set aside and treated as a logical mass storage device by the DOS operating system.

Root Directory

The first-level directory; the base directory for DOS.

Share

The process of allocating conventional, extended, or expanded memory among Super PC-Kwik's cache buffer, the Print Spooler, the ReDOS buffer, the ReView buffer, and the RAM disk. The Power Pak programs each take memory from the cache buffers when they need it and return it when they are done.

Subdirectory

Any directory beneath the root directory.

Upper Memory Blocks (UMBs)

Memory located above the normal DOS limit of 640K bytes and below the beginning of extended memory at 1024K bytes (1 Mbyte). Parts of this memory are reserved for DOS and BIOS functions.

XMS

Extended Memory specificataion, a memory driver providing extended memory control, support for UMBs and EMS from extended memory.

INDEX

.PIF files 200, 201, 203, 204
/?
Keyboard Accelerator 67, 81
Screen Accelerator 90, 94, 96
Spooler 106, 114, 167
Super PC-Kwik 40, 45, 47
/- 119, 206
/* 39, 43, 277, 43
/&
Keyboard Accelerator 143
Screen Accelerator 153
Spooler 163
/&A 144, 154, 164, 169, 257, 279, 281, 282
/&C 144, 154, 164, 279, 281, 282
/&U 63, 86, 104, 120, 131, 144, 154, 164, 169, 199, 245, 249, 257, 264, 277, 279, 281, 282
/1
Keyboard Accelerator 65, 76, 81
Spooler 112, 194
/7 120
/A 14, 32, 33, 41, 42, 46, 63-66, 76, 86, 88, 89, 93, 94, 130, 156-158, 199, 216, 218, 237, 242, 249, 258, 262, 264, 265, 277, 279, 281
Keyboard Accelerator 66, 76
Screen Accelerator 88, 89, 93, 94
Spooler 164, 193
Super PC-Kwik 41
/B 19, 33, 86-88, 93-95, 121, 129, 156, 217, 218, 264, 277, 281
Screen Accelerator 87, 93, 94
Spooler 164, 187
Super PC-Kwik 121
/C 32, 42, 45, 63, 78, 88, 95, 102, 103, 111, 129, 154-157, 168, 194-198, 249, 250, 254, 256, 262, 264, 277, 279-282
Screen Accelerator 95, 154, 156
Spooler 111, 197
Super PC-Kwik 42

/D 33, 46, 47, 57, 65, 81, 95, 106, 112, 113, 121, 122, 124, 125, 136, 194, 241, 252, 264, 277, 278, 280, 281, 283, 285
Keyboard Accelerator 65, 81
RAM Disk 57
Screen Accelerator 95
Spooler 106, 112, 113
Super PC-Kwik 46, 121
/E 14, 32, 43, 46, 47, 66, 81, 95, 112, 123, 129, 130, 194, 213, 215, 216, 235, 237, 242, 252, 262, 278, 280, 282, 283
Keyboard Accelerator 66, 81
Screen Accelerator 95
Spooler 112
Super PC-Kwik 46
/EM 42, 43, 46, 218, 277
/EP 43, 218, 277
/Ex:nnnnn 122
/F 47, 73, 95, 106, 112, 113, 148, 194, 239, 246, 255, 278, 282, 283
Keyboard Accelerator 144
Screen Accelerator 95
Spooler 106, 112, 113
Super PC-Kwik 47
/G 104, 111, 123, 165, 168, 199, 242-244, 277, 282
Spooler 111, 168
Super PC-Kwik 123
/H 33, 66, 76, 81, 104, 124, 125, 129, 134-136, 165, 168, 199-201, 238, 241, 258, 264, 277, 279, 280, 282, 285
Keyboard Accelerator 66, 76, 81
Spooler 165, 168
Super PC-Kwik 124
/I 63, 76, 104, 111, 141, 168, 172, 177, 199, 252, 279, 282
Keyboard Accelerator 76
Spooler 111, 113, 168, 176
/J 165, 166, 202, 214, 282
Spooler 165

/K 63, 66, 76, 86, 93, 95, 104, 107, 111, 123, 124, 150, 151, 165, 168, 189, 199, 200, 203, 243, 264, 277, 279, 281, 282
Keyboard Accelerator 76
Screen Accelerator 87, 93, 95
Spooler 111, 165, 168
Super PC-Kwik 124
/L 33, 35, 43-45, 63, 78, 79, 102-104, 111, 112, 114, 125, 126, 165, 174, 191, 194-196, 198, 199, 235, 256, 264, 277-280, 282, 283
Keyboard Accelerator 78
Spooler 111, 197
/L:nnnn 44
/M 37, 44, 47, 48, 79, 105, 113, 149, 170, 194, 235, 246, 278-280, 283
Keyboard Accelerator 79
Spooler 113
Super PC-Kwik 47
/N 104, 165, 166, 199, 282
/O 33, 104, 113, 124, 125, 137, 165, 166, 192, 194, 199, 277, 282, 283
Spooler 113, 166, 191
Super PC-Kwik 124
/P 20, 39, 44, 45, 47, 48, 76, 81, 90, 95, 104, 107, 112, 113, 135, 194, 235, 253, 278, 280-283
Keyboard Accelerator 76, 81
Screen Accelerator 95
Spooler 104, 107, 112, 113
Super PC-Kwik 39, 44, 47
/Q 33, 86, 89, 104, 125, 135, 137, 155, 160, 161, 166, 176, 182, 199, 235, 278, 281, 282
Screen Accelerator 89, 155, 160, 161
Spooler 166, 175, 181
Super PC-Kwik 125
/R 64, 77, 86, 88, 91-94, 113, 122, 125, 126, 129, 156, 170, 184, 185, 190, 194, 216, 217, 242, 250, 252, 264, 278, 281, 283
Keyboard Accelerator 76, 77, 146, 147
Screen Accelerator 92-94
Spooler 113, 184, 189
/R:nnnnn 125

/S 56, 57, 86, 91, 92, 94, 95, 113, 122, 125, 126, 129, 144, 146, 147, 170, 184, 194, 223, 224, 235, 242, 245, 253, 278, 279, 281, 282, 283
Keyboard Accelerator 144, 146
RAM Disk 57
Screen Accelerator 91, 94, 95
Spooler 113
/S:nnnnn 126
/T 33, 42, 64, 77, 104, 113, 126, 127, 129, 131, 137, 139, 165, 166, 193, 194, 199, 208, 264, 278, 282, 283
Keyboard Accelerator 77, 146
Spooler 113, 166, 192
/T:nn
Super PC-Kwik 127
Spooler 166
/U 40, 41, 47, 48, 67, 81, 96, 105, 106, 110, 112, 113, 135, 194, 195, 237, 246, 250, 278, 280, 282, 283
Keyboard Accelerator 67, 81
Screen Accelerator 96
Spooler 105, 106, 112, 113
Super PC-Kwik 47
/V 33, 63, 79, 104, 110, 114, 128, 133, 134, 145, 166, 198, 199, 278-280, 282
Keyboard Accelerator 145
Spooler 110, 166, 197
Super PC-Kwik 128
/W 33, 63, 73, 80, 86, 87, 94, 96, 104, 128, 166, 167, 185, 186, 199, 278, 279, 280-283
Keyboard Accelerator 80
Screen Accelerator 87, 94, 96
Spooler 166, 184, 185
Super PC-Kwik 128
/X 20, 63, 74, 79, 80, 86, 108, 128, 139, 155, 161, 162, 167, 201, 235, 239, 246, 247, 250, 251, 258, 264, 278-280, 283, 284
Keyboard Accelerator 80
PCKMAP 21
Screen Accelerator 155, 161
Spooler 108, 167
Super PC-Kwik 128

/Z 63, 74, 79, 145, 167, 170, 253, 280
Keyboard Accelerator 145
Spooler 167

<Alt><+> 64, 147
<Alt><-> 64, 147
<Alt><Ctrl>- 64, 148, 280
<Alt><Ctrl><+> 64, 147
<Alt><Ctrl><-> 148
<Alt><Ctrl><1> 65, 148
<Alt><Ctrl><2> 65, 148
<Alt><Ctrl><3> 66, 148
<Alt><ScrollLock> 91, 94, 281
<Alt><Shift>B 87
<Backspace> 71, 175, 178, 179
<Ctrl><Backspace> 71
<Ctrl><End> 72
<Ctrl><H> 71
<Ctrl><Home> 72
<Ctrl><PgDn> 75
<Ctrl><PgUp> 75
<Ctrl><→> 70
<Ctrl>C 73, 224
<Ctrl>M 73
<Ctrl>U 72
<Ctrl>W 71
<Ctrl>[72
<Del> 71, 179
<End> 71, 72, 75, 91
<End><End> 75
<End><End><End> 75
<Esc> 8, 19, 70, 72, 92, 109, 171-178, 181, 190, 222
<F3> 72, 177, 178, 181, 182
<Home> 71, 72, 75, 91
<Home><Home> 75
<Home><Home><Home> 75
<PgDn> 74, 75, 91, 222
<PgUp> 74, 75, 91, 222

386MAX 4, 13, 206, 214, 215, 263, 272, 273, 275

ANSI.SYS 161
Auto Page-Break mode, Spooler 164, 173, 187
AUTOEXEC.BAT 11, 12, 22, 23, 64, 132, 139, 194, 195, 222, 223, 228, 262, 264, 265, 267
Automatic memory location, RAM disk 51

Back slash 285
Baud rate 285
Benchmark programs 232
    BENCHPCK advanced features 235
    Multisoft's BENCHPCK 233
    overview 227
    PC Magazine's Benchmark Diskette 232
    Peter Norton's System Information 232
    Power Meter 233
Benchmark testing and cache size 230
BENCHPCK 3, 227, 231, 233, 234, 283
Bernoulli drives 138, 205-207, 238, 244, 285
BIOS 83, 88, 123, 140, 141, 156, 165, 202, 203, 207, 214, 233, 237, 238, 242, 243, 244, 257, 266, 282, 289

Cache hit indicator 1, 39, 43
Cache memory, RAM Disk use of 52
Cache size 130
CGA 84, 89, 100, 155, 159-161, 281, 285
Clock accelerator hardware, and Super PC-Kwik 210
Command line conventions, general 21
Communication software 217
Compatible files
    default list 157
    Screen Accelerator 156
CONFIG.SYS 11, 12, 20, 52-54, 56, 58, 131, 138, 139, 161, 170, 205, 206, 207, 208, 212, 221, 228, 240, 242, 244, 263, 265, 266, 267

Conventional memory
and Keyboard Accelerator 149
and RAM disks 211
and Screen Accelerator 85, 155
and Spooler 167
conserving 5, 35, 130
definition 286
maximum size 126
saving 269
Cursor, definition 286

Daisy-wheel printers, Spooler 102
Data compression, Spooler 100, 167
Data length, serial printers 195
dBase III 150
DESQview 38, 158, 159, 200, 201, 216, 217, 158, 159, 199
Disk Accelerator *see Super PC-Kwik Disk Accelerator*
Disk cache
alternatives 26
definition 285
overview 25
performance improvements 28
size 28
theory 27
see also Super PC-Kwik Disk Accelerator
DISPLAY utility 222
DOS paths, using with RAM Disk 55
DOS prompt, with ReDOS 70
DOS versions supported 210

EGA 84, 89, 100, 160, 285
Error messages 7, 108, 114, 135, 237, 239, 245, 260, 265
Keyboard Accelerator 245
RAM Disk 245
Screen Accelerator 249
Spooler 184, 252
Super PC-Kwik 237
ESDI controllers, and Super PC-Kwik 208

Expanded memory
and cache size 130
and RAM disks 211
definition 286
maximum size 126
Expanded memory simulators 218
Extended memory
allocation 122
and cache size 130
and communication software 217
and interrupts 121
and RAM disks 211
and RAMdrive 123
and Windows 211
definition 287
maximum size 126

FANSI.SYS 162
Foreign keyboards 150
FormFeed, Spooler 113, 175
Forward slash 287

Graphics video modes 83, 173, 185

Hardware supported 205
Help 9
Hercules 84, 88, 100, 156, 204, 258, 287
HIMEM.SYS. 272
Hot key definition 287
Hot keys 19, 66, 108, 144, 147

Insert option 175, 183
INSTALL iii, 6, 11-13, 15, 16, 22, 23, 52, 54, 63, 85, 102, 132, 205, 207, 209, 212, 213, 221-223, 238, 256, 257, 261, 262, 271, 288
Installing programs to disk 11
Interrupts 121

Keyboard Accelerator 2, 5-8, 17, 19, 59-68, 75, 76, 78, 80, 81, 91, 93, 99, 104, 107, 108, 143, 144, 146-151, 159, 165, 170, 175, 177, 180, 193, 199-201, 211, 214, 215, 217, 222, 223, 245, 246-248, 258, 264, 272, 273, 279, 286, 287
<5> key 147
acceleration rate 60
adding special keys 144
adjusting response speed 63
advanced parameters 143
and dBase III 150
and foreign keyboards 150
and Microsoft Windows 149
and other software 150
audio parameter 66
choosing memory type 143
command line conventions 21
cursor speed 60
customizing 64
disabling 65, 148
disabling audio 66
disabling hot-keys 66
enabling 66
error messages 245
fast response keys 145
foreign-keyboard hot-key mode 150
general 59
help 66
loading 17
loading parameters 76
parameter options 75
ReDOS command line editor 17
ReDOS command list size 145
ReDOS parameters 78
ReDOS startup file 144
repeat rate 147
repeat speed 60
response time 147
running parameters 81
saving conventional memory 149

special keys to accelerate 146
spreadsheet mode 65, 76, 81, 148
switching to foreign mode 151
unloading 67
video attributes 145
wild key 147

Laptop computers 110, 161
Large disk drives, and Super PC-Kwik 207
Laser printers, and Spooler 191
Lending memory 3, 30, 34
LineFeed, Spooler 113, 176
Loading
automatic 22
batch file 22
definition 288
Keyboard Accelerator 17
manual 22
Screen Accelerator 18
Spooler 19
Super PC-Kwik 16, 32
using batch files 132
see also Keyboard Accelerator, RAM Disk, Screen Accelerator, Spooler, Super PC-Kwik Disk Accelerator
Loading parameters
Keyboard Accelerator 76
Screen Accelerator 93
Spooler 111
Super PC-Kwik 41

Mark/release programs, and Super PC-Kwik 40
Measurements
Spooler 105, 113
Super PC-Kwik 37
Memory
80386/486 processors 272
80286 processors 270
8088 processors 270
and NEAT chip set 271

lending 3, 30, 34
saving conventional 5, 269
sharing 3, 30, 34
usage summary 274
using expanded 269
using extended 269
using UMBs 269
see also Conventional memory, Expanded memory, Extended memory, Upper memory blocks
Microsoft Windows *see Windows*
MODE command, Spooler 194
Modify option 172
Monochrome displays iii, 12, 84, 88, 93, 100, 145, 156, 160, 161, 166, 249, 279, 280, 281, 282, 287
Mouse, and screen blanking 159

NANSI.SYS 162
NANSI286.SYS 162
Networks and Power Pak 218

Pagination modes, and Spooler 111, 187
Parity, and serial printers 195
PCKKEY 17, 63-67, 75, 78, 80, 144, 146-148, 150, 154, 157, 170, 246, 279
PCKMAP 21
PCKRAMD.SYS 52, 53, 57
PCKSCRN 18, 85-87, 90, 92, 154, 157, 158, 161, 162, 170
PCKSPL 19, 99, 103-108, 110, 111, 114, 154, 157, 168, 171, 184, 185, 190, 194-196, 198-200, 252
Personal computers supported 205
Plus Passport removable drives 209
Pop-ups, Spooler 100, 108-111
POWEROFF iii, 15, 22, 68, 261
POWERON iii, 12, 22, 64, 132, 213, 262, 264, 265
PowerWrite option for Super PC-Kwik 136
Print Spooler *see Spooler*

QEMM 4, 13, 206, 214, 216, 217, 263, 272-275
QEXT 275
QRAM 271, 274, 275

RAM Disk 2-4, 6, 7, 20, 26, 27, 31, 34, 44, 46, 49-58, 101, 122, 170, 211, 238, 242, 245, 248, 250, 254, 255, 277, 278, 288, 289
automatic memory location 51
bad sectors 58
command line conventions 21
compilers use of for temp files 55
CONFIG.SYS 53
definition 288
determining size 54
drive not ready error 54
error messages 245
initialization by the cache 54
installation 52
insufficient disk space 58
logical device name 53
loss of files 56
maximum directory size 57
maximum disk size 53, 57
maximum size available 58
replacing existing RAM disk 53
sharing memory 52
startup 20
theory 49
unloading 56
using DOS paths with 55
vs. disk cache 50
with other DOS drivers 53
READ.ME files 7, 9, 203, 205, 211, 212, 221, 222, 261
ReDOS ii, 2, 17, 31, 61-63, 67-70, 72-74, 78-81, 101, 143-145, 148, 149, 170, 214, 246-248, 250, 272, 273, 279, 280, 289
<Alt>S 70
<Tab> 70
DOS prompt functions 70
flushing command list 69
functions 69

manipulating the window 73
parameters 78
searching command list 70
using 67
window functions 70
ReView ii, 2, 11, 18, 31, 35, 83, 84, 86, 88-95, 102, 155, 156, 161, 170, 214, 215, 248, 250, 261, 263, 281, 282, 289
disabling 92
quitting 92
starting 91
video buffer size 91, 92
RLL controllers, and Super PC-Kwik 208
RUNBENCH 16

Screen Accelerator 2, 5-7, 17, 18, 83-92, 94-96, 153-161, 164, 211, 214, 217, 249-251, 264, 281, 285, 287
advanced mode 88, 93, 156
advanced mode definition 285
and ANSI drivers 155, 161
and compatible files 154, 156
and DESQview 158, 159
choosing memory type 153
command line conventions 21
conserving conventional memory 85
error messages 249
Generic mode 88, 93
generic mode definition 287
graphics video modes 83
help 90
hot-key screen blanking 87
introduction 83
loading 18, 85
loading parameters 93
quick option 155, 160, 161
ReView 18, 89, 90
running parameters 94
saving conventional memory 155
screen blanking 86, 94
screen blanking with mouse 159

size parameter 92
switching video modes 89
unloading 90
Screen blanking 87
with mouse movement 159
SCSI controllers, and Super PC-Kwik 208
Serial printers 194
baud rate 195
data length 195
parameter examples 197
parity 195
setting characteristics 195
Spooler parameters for 195
stop bits 195
Sharing memory 3, 30, 34
Sidekick 200, 265, 199
Single-Sheet mode, and Spooler 164, 173, 187
Software supported 210
Spooler
activate hot-key 111
activating with hot-key 107
advanced parameters 163
advanced use of 163
and daisy-wheel printers 102
and data compression 167
and DESQview 199
and graphics 173
and graphics video mode 186
and other software 116, 199
and Sidekick 199
and Windows 165, 200
auto page-break mode 173, 187, 190
beep and no pop-up 186, 189
changing parameters 110
choosing memory type 163
color combinations for the pop-up 166
command line conventions 21
conserving conventional memory 98, 167
data compression 100, 101

defining serial printer characteristics 195
detecting full memory 185
disable option, pop-up 181
disabling 106, 112
display measurements 101, 113
display parameters 113
displaying measurements 105
edit a string to insert 178
enable after disabling, pop-up 182
enabling 112
error messages 252
exiting pop-up 109, 172
finding hot-key combination 107
flush from batch file 106
flush option 182
flushing data 113
graphics video mode 185
graphics video modes 110
help 106
Hercules adapter 203
hot key pop up 19
insert option 175, 183
insert string option 176
insert sub-menu 175
installing in single-sheet mode 164
installing parallel printers 111
installing serial printers 103
installing with auto page-break mode 164
installing with parallel printers 103
introduction 97
laser printers 191
loading 19
loading parameters 111
locating pop-up window 108
memory full 114
memory use 98
modify option 172
modify sub-menu 172
output rate and serial printers 190

output through the BIOS 165
outrate option 174
page length 188
pagination modes 111, 187
pagination with laser printers 188
paging option 173
pop-up display 108
pop-up display colors 110
pop-up in graphics video modes 100, 111
pop-up options for print control 109
position of the pop-up window 167
printer buffers 189, 191
printer errors 184
printer output rate 111, 166, 190
printer status messages 185
printer timeout value 166, 192
redefining the hot-key 164
redirecting output to serial printer 194
reset measurements 113
reset printer 113, 176
resume option 172, 182
resume printing 113
running from DOS command line 107
running parameters 112
running two Spoolers 192
send control characters 175
send escape sequences 111, 176
send FormFeed 113, 175
send LineFeed 113, 176
sending a string to a printer 180
set output rate 113
set pop-up colors for laptops 166
set printer page length 173
setting up for serial printers 194
sharing cache buffer memory 102
sign-on screen 104, 197
single-sheet mode 173, 187, 188
slow foreground processing 192
special features 187

status messages 259
suppressing warning messages 166
suspend option 183
suspend printing 113
timeout value for printers 113
unloading 105
use with word processors 189
using insert-string 111
using MODE command with 194
using modify 111
Stop bit parameter, and serial printers 195
Subset files, for Super PC-Kwik 36
Super PC-Kwik Disk Accelerator
advanced parameters 119
advanced support 30
advanced support definition 285
advanced vs. generic support 134
and batch file loading 132
and Bernoulli drives 138, 205
and clock accelerator hardware 210
and large disk drives 207
and mark/release programs 40
and network drives 138
and RAM drives 138
and RLL, ESDI, SCSI controllers 208
automatic memory selection 33
boot sector warnings 123, 242
cache hit indicator 39
cache size 129
command line conventions 21
conserving conventional memory 35, 130
conventional memory use 130
description 1
disks not supported 210
displaying parameters 39
expanded memory use 130
extended memory use 131
generic support definition 287
help 40

lending, definition of 288
loading 16, 32
loading errors 237
loading from an alternate drive 33
loading parameters 41
measurements 37
memory lending 3, 30, 33
memory sharing 3, 30, 33
memory sharing definition 289
PowerWrite option 136
restricting caching 119
running parameters 46
startup screen 32
subset files 36
track buffer size 126, 131
unloading 40
Windows measurement display 38
SUPERPCK 16, 20, 32, 33, 36, 37, 39, 40, 45, 46, 48, 119, 129, 132, 135, 139, 154, 157, 223, 224, 241, 262
SyQuest removable drives 209

Technical Support 9, 261, 263, 266
TESTEMM 13
Track buffer size, Super PC-Kwik 126, 131
Troubleshooting 261

UMBs *see Upper memory blocks*
Unloading
Keyboard Accelerator 67
RAM Disk 56
Spooler 105
Super PC-Kwik 40
Upper memory blocks 5, 6, 62, 85, 99, 120, 130, 149, 155, 169, 239, 245, 248, 249, 251, 258, 269, 275, 289

VGA 84, 89, 100, 160, 165, 201, 282, 285
Video adapter
CGA 84, 89, 100, 159
CGA with monochrome monitor 160

EGA 84, 89, 100, 160
Hercules 84, 88, 100, 156, 203
monochrome 84, 88, 100
VGA 84, 89, 100, 160

Warning messages, Spooler 166
Windows 38, 39, 116, 123, 149, 150, 159, 165, 200-204, 211-217, 242, 263
and mouse blanking 159

ZANSI.SYS 162

POWER PAK VERSION 2 WITH SUPER PC-KWIK. THE PREMIER UTILITY PACKAGE FOR TOTAL SYSTEM SPEED-UP.

Engineered to speed up any PC.
With PC-Kwik Power Pak, any computer can perform 2 to 5 times faster: not just on benchmarks, but in the real world, where it counts. Along with speed, Power Pak gives your system a whole new "feel": not only faster, but smoother, more integrated, and more responsive.

Sophisticated performance-enhancement techniques.
From the makers of Super PC-Kwik, the industry's top-rated disk cache, Power Pak's advanced performance-enhancing technology can dramatically improve the performance of any PC.

Power Pak's high-performance modules work seamlessly together to accelerate:

Disk, data and program access
Screens
Keyboards
Printing functions
Command line operations

The result is an exhilarating boost in total system speed.

"Until I started using Multisoft's PC-Kwik Power Pak, I thought I had squeezed every ounce of power from my ALR 386/2. But I was wrong. This collection of RAM-resident utilities has boosted my system's performance more than I ever dreamed possible."

"Soon after Power Pak's installation, the wonders began. My hard drive's in-use light, normally more active than a firefly on a summer evening, now flashes only occasionally. I no longer have to wait while lengthy documents print. My display and keyboard zip along like roadsters on high octane. My cursor zooms. And if text flies by too fast to see, I can always press <Scroll Lock>, activating the screen accelerator's ReView feature to retrieve data that has scrolled away."

"In these days of megabyte, megabuck software, it's refreshing to find great stuff like Power Pak—a set of super utilities at a fair price. They don't come much better than this."

Tom Swan, PC World 9/89

*"I've always been a big fan of Super PC-Kwik, the **definitive** disk cache software. It now comes bundled with a print spooler, a dynamic RAM Disk, a keyboard accelerator and a **remarkable** screen accelerator that is unlike anything I have ever seen."*

John Dvorak, PC Magazine 11/14/89

FEATURES INCLUDE:

Simple Installation
Automatic Configuration
Optional Customization Parameters

Advanced Memory Management
Program code can load into upper memory blocks or expanded memory
Dynamic RAM allocation and sharing with other applications

Disk and Data Acceleration
Super PC-Kwik, the industry's fastest and most reliable disk cache
Conventional memory caches to 512Kb
Extended or Expanded caches to 16Mb
Supports up to 2 RAM Disks up to 16Mb in size

Screen Acceleration
Video speed increase of 2 to 3 times normal
Eliminates flicker and snow
Variable-size ReView scrollback buffer
Screen blanking for CGA, EGA, VGA, and monochrome

Keyboard Acceleration
Repeat rates from 9 to over 100 cps
Adjustable acceleration rate
Hot-key controllable

ReDOS Command Line Editor
Stores and displays DOS commands
Variable list size
Optional load from disk

Print Spooling
Data compression to save buffer space
Handles graphics, soft fonts & single sheet printing
Hot-key adjustable
Supports 2 serial or parallel printers

SUPPORTS
Windows 2x and 3.0
LIM 3.2 and 4.0
EMS managers 386MAX, QEMM, CEMM
XMS standard and managers
DOS networks
DESQview
Large hard disks
Bernoulli and some other cartridge disks
5¼" and 3½" diskettes
Partitioning software
Serial and parallel printers
Hercules, CGA, EGA, VGA and monochrome monitors
84 & 101 key keyboards

REQUIREMENTS
IBM PC, XT, AT, PS/2 computers and true compatibles including 386/486
DOS versions 2.0 to 5.0
128Kb to 16Mb of free memory
Extended or expanded memory recommended for top performance

90 Day Money-Back Guarantee.

You don't have to trade memory for performance.
Not only will Power Pak increase your productivity and enjoyment, it will do it simply and transparently, without complicated installation or parameter adjustments. The easy installation process automatically sets-up Power Pak for maximum efficiency and performance.

On suitably equipped machines, Power Pak can load itself into upper or expanded memory, requiring the least possible amount of conventional memory (in certain cases, Power Pak will load entirely into upper memory, using no conventional RAM at all).

Once loaded, Power Pak continually monitors system requirements, intelligently configuring itself for maximum performance in every situation. Power Pak can use all available extended or expanded memory to boost performance, release memory to applications as needed, and recover that memory when the application exits. You no longer need to set aside memory for caching and print spooling, and the cache will always be the optimum size for maximum system speed and performance.

Power Pak—The next step forward in performance technology.

"Super PC-Kwik is the fastest cache program available…

When you combine it with the RAM Disk, print spooler and other programs in Multisoft's PC-Kwik Power Pak, Super PC-Kwik makes better use of your memory than any other cache you can buy."

PC Magazine Editor's Choice 2/14/89

"Not only is Super PC-Kwik the fastest utility we tested, but its compatibility, installation, tuning options, and documentation are also tops…Super PC-Kwik's performance, compatibility and flexibility are superb. If you're looking for the best, this is it."

PC World Best Buy 2/90

Multisoft Corporation
The Leader in Performance Dynamics

MULTISOFT

15100 SW Koll Parkway
Beaverton, OR 97006
(503) 644-5644
Sales 1-800-234-KWIK
Fax 503-646-8267

PC-Kwik is a registered trademark of Multisoft Corporation. All other brand and product names are trademarks or registered trademarks of their respective companies.